

American Artisan

Founded 1880

The Warm Air Heating
and Sheet Metal Journal

Vol. 95, No. 17

CHICAGO, APRIL 28, 1928

\$2.00 Per Year

Standard
Code
and the
Weir Steel
Furnace
-an unbeatable combination-

The MEYER FURNACE CO.
Peoria, Illinois

The Most Complete Line in the Industry!

Do you know that Mueller builds a more complete line of heating equipment than any other concern in the industry, covering a complete price range—a furnace for every kind of buyer?

Do you know that Mueller warehouse stocks at Milwaukee and at strategically situated distribution points throughout the country enable the dealer to get what amounts to almost "local service" no matter where he is located?

Let the Mueller salesman give you all the details.
When would you like to have him call?

L. J. MUELLER FURNACE COMPANY

193 Reed St. Established 1857 Milwaukee, Wis.

Makers of Coal and Gas-fired Furnaces, Boilers and Cabinet Heaters; Combination Coal and Wood Furnaces; Horizontal School and Church Heaters; Hot Water Supply Boilers and Garbage Burners; Pipeless Furnaces; Steel Furnaces; Registers and Furnace Fittings.

SHOWROOMS AND WAREHOUSES

Baltimore
Salt Lake City

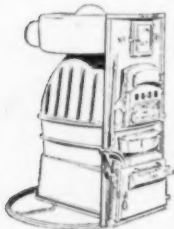
Chicago
Detroit

Minneapolis
St. Paul
Ft. Collins, Colo.

St. Louis
Seattle

Members of the National Warm Air Heating & Ventilating Association.

Steam and Hot Water Boilers. Double dome. 20 sizes: 16" to 34" grates.



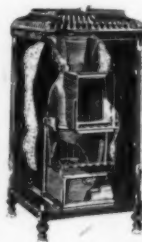
Mueller Combination Wood and Coal Furnace with Oval Fire-Pot. Designed to meet the heating needs of the West and Northwest. Takes 2 ft. wood lengths.



Furnacette Cabinet Heater, Coal and Gas-Fired.



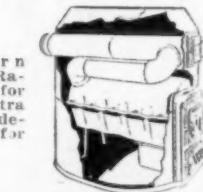
Steam and Hot Water Boilers. Single dome. 15 sizes: 16" to 28" grates.



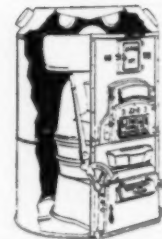
Mueller Return Flue Sheet Steel Radiator for Wood. Has extra heavy grates, designed especially for burning wood.



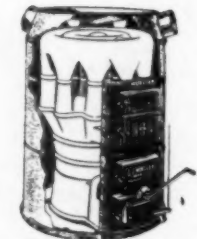
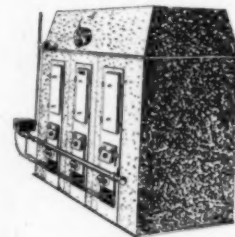
Automatic Gas-Era, Gas-Fired, multiple unit, all-cast. Warm Air Furnace. Tested and approved by American Gas Association Laboratories.



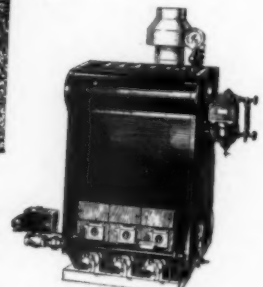
Mueller Horizontal Tubular Heater. The biggest, most powerful furnace made for heating large buildings. Adapted to any kind of coal, coke, wood, or oil.



Return Flue Radiator, Full Front Furnace. Single and double door. 5 sizes: 18" to 30" pots.



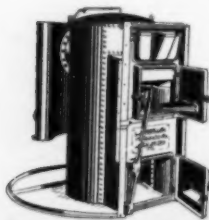
Double Radiator, Self-Cleaning Furnace. 7 sizes: 20" to 33" pots.



Automatic Gas-Era, Gas-Fired, sectional Steam and Hot Water Boilers. Tested and approved by American Gas Association Laboratories.



"Convector" Pipeless Furnace. Single and double door. 4 sizes: 18" to 27".



Forced Air Unit Heaters for schools, churches, factories, garages and public buildings. 850 to 6,000 C. F. M.

"Hi-Power" Allsteel Furnace. 5 sizes: 22" to 34" drums. Electric welded and riveted.



MUELLER FURNACES

The NEW FAULTLESS FURNACE

Series "C"

The
most
complete
and
attractive—



standard
style
in the
high quality
field

Front is handsomely
finished in Gray

—companion to the Standard Code

NOT just a good high quality furnace but a warm air heating plant designed in every detail to be up-to-the-minute in what is conceded to be the best in warm air heating by the leading authorities in the industry.

Not just a new number but an entirely new construction based on our knowledge that many of the liveliest warm air heating contractors are *selling warm air heating on the Standard Code basis* and need an advanced furnace such as this—a fit companion for Standard Code installations. Fifty years of furnace manufacturing experience tells us that this new Series "C" Faultless furnace more than fills the bill for quality warm air heating.

See this new furnace NOW—write for full details and agency proposition TODAY

The GRAFF FURNACE CO.
116-18 WOOSTER ST., NEW YORK CITY

Makers of FAULTLESS FURNACES for 50 Years

Advanced Features—

- Larger Radiator than other makes.
- Greater Heat Pipe Area.
- Greater Free Air Space.
- Heavy Castings—strongly ribbed.
- Covered Gas-Tight Joints.
- Solid Base Bottom and Ring.
- Arched Feed Section.
- Frameless Doors—Independent of Front.
- Gas Baffle Door.
- Large Feed Door Opening.

- Cogless Grates.
- Gas Ignition (or Smoke Consumer) is part of regular equipment.
- Brass Hinge Pins.
- Brass Bolts in Grate Bar Panel.
- Very Large Humidifier.
- Extra Large Grate Surface.
- Handsome Gray Front.
- Upright Shaking Device if preferred.

For
STANDARD CODE
installations use
the



STEEL FURNACE



Combine the Torrid Zone Steel Furnace with a Standard Code Installation and Sell An Ideal Heating System

A PERFECT installation according to the Standard Code might be a disappointment to the user unless it is built around the TORRID ZONE Steel Furnace.

A Standard Code installation usually costs more than the undersized kind, but why charge your customer this extra money unless you supply a furnace that is in keeping with the balance of your work?

Every TORRID ZONE Furnace is made of heavy steel plates riveted and calked so it can't leak gas or smoke. The dealer who makes TORRID ZONE installations has the satisfaction of knowing that the respon-

sibility for gas tight construction has not been passed on to him and it will not be necessary to go back on the job in two or three years to replace broken fire pots or apply a new coat of cement to gas leaking seams.

TORRID ZONE Furnaces are so constructed that if necessary, a new grate or fire brick can be easily replaced through the feed door at very little expense.

There are no seams in TORRID ZONE Furnaces to leak gas so the dealer is not required to make return trips at regular intervals to fill them up with cement.

The extra large radiating surfaces, unusually long smoke travel and the perfect carburetion of fuel gases are additional features which make the Torrid Zone Furnace easier to sell and in keeping with Standard Code installations.

LENNOX FURNACE COMPANY, Inc.

Factories and Offices

MARSHALLTOWN, IOWA

SYRACUSE, NEW YORK

Mention AMERICAN ARTISAN in your reply—Thank you!

The Finest Sunbeam Furnaces in 44 Years of Furnace Making

THE finest furnaces in Sunbeam history are the new Sunbeam Warm-Air Furnaces, 1000 Series. They have every worth-while feature that 44 years of heating experience could suggest; every improvement that the largest makers of heating equipment in the world could provide; every selling advantage that dealers striving for increased sales volume could specify.

Scientific design has provided an unusually generous amount of heating surface. Large casing dimensions assure the delivery of warm air in abundance. Sunbeametal, the special Sunbeam

furnace iron with twice the strength of ordinary cast iron, gives Sunbeam castings longer life. Machine-molding gives every casting uniform thickness and uniform strength.

These and numerous other superiorities give Sunbeam dealers a decided advantage when they are competing for furnace sales.

It will pay you to learn more about the new Sunbeam Warm-Air Furnaces, 1000 Series. The new 40-page Heating Manual and Catalog describes them completely. Return the coupon and this valuable book will be forwarded to you promptly.

THE FOX FURNACE COMPANY

ELYRIA, OHIO

Largest Makers of Heating Equipment in the World

Sunbeam Superiorities

1. Massive Radiator, Clean-out and Smoke Collar cast in one piece.
2. Feed Section extends outside of front of furnace.
3. Ash Pit extends outside of front of furnace.
4. More than 20-feet of joint within warm-air chamber eliminated.
5. Two types of grates — Boiler or Flat—are available.
6. Easy-to-operate shaking lever.
7. All joints are deep, clean-cut cup joints.
8. Doors and door openings are machine-ground in special jig.
9. Heating unit is centered.
10. One-piece base with high casing flange reduces installation time.
11. All castings are machine-molded.



The New Heating Manual

This 40-page book has just come off the printing presses. Installation suggestions, heating information, tabulations and formulas are incorporated in it to save the furnace dealer's time, and prevent miscalculations. Whenever you plan an installation, this heating manual will prove most valuable.

In the catalog section of this book the complete line of Sunbeam Furnaces is illustrated and described in detail.

A copy is yours for the asking. And with the coupon below, your request can be made conveniently and quickly.

The new
SUNBEAM
WARM-AIR FURNACES
1000 Series



RETURN THIS COUPON

THE FOX FURNACE COMPANY,
Elyria, Ohio.

Please send a copy of the new 40-page Catalog and Heating Manual.

Name

Address

City and State

A-5

Agricola

From scratch to a very dominating position in the industry in less than four years by reason of expert heating experience, modern manufacturing efficiency and advantageous material and labor conditions.

Agricola is made in one of the largest and most modern equipped furnace plants in America. Here a furnace of correct design, quality built in every detail, is manufactured in accordance with present day economical quantity production methods.

Agricola Furnace Company
GADSEN, ALABAMA

For
Jobbers
and the
LIVE WIRE
Dealers

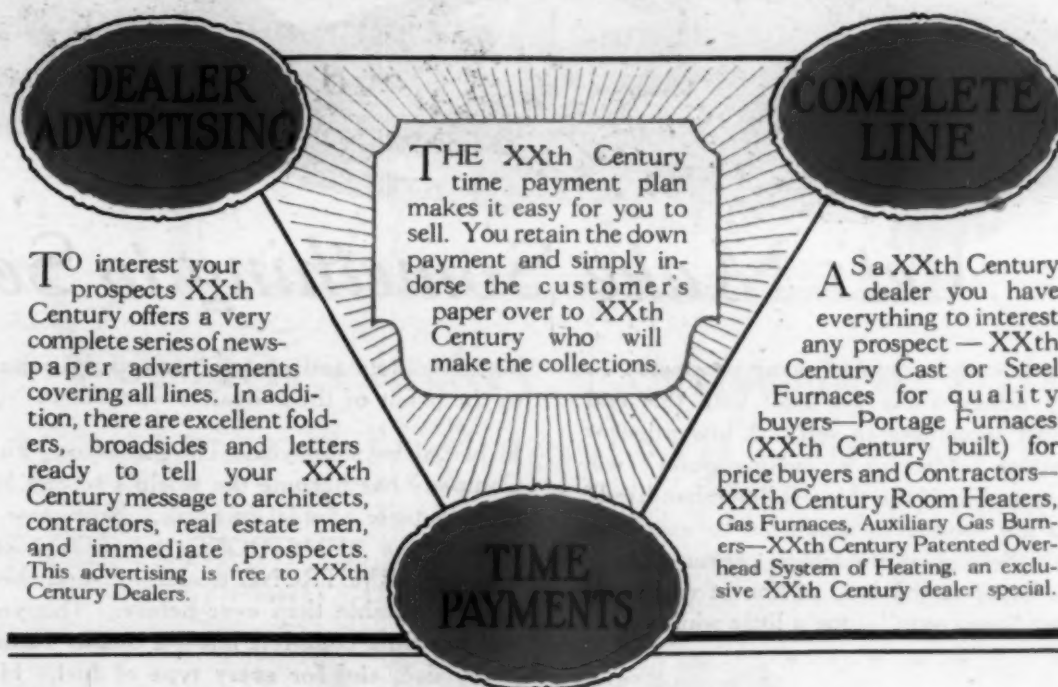
For these
reasons YOU
can dominate
YOUR TERRITORY
with the better
Agricola

Grow with
Agricola —
Write today
for full
details



The TRIANGLE of XXth CENTURY

Dealer Success



Dealer Advertising---to bring them in.

A Complete Line---to interest them.

Time Payments---to make it easy for them to buy.

From any angle you consider it, XXth Century is a profitable and successful line. Concentrate on XXth Century and you get longer profits and greater credit. Send the coupon for details.

**The XXth Century
H. & V. Company**
Akron, Ohio

"Manufacturers of Fine Furnaces for 34 Years"

XXth Century H. & V. Co.
Akron, Ohio.

Without obligation, please provide me with the
XXth Century Dealer Proposition.

Name

Address

A. A. 4-28-28



.....*Let's Make Something to Sell*"

This is the unsound origin of many products . . . Too many things today are built with this end in view: **just something to sell.** A low price or a new feature added as a "selling point" will tempt many to buy if the thing is "merchandised" right. So the product is made not to excel but to sell . . . Selling of the "high pressure" type blinds the buyer to the lack of honest value and the product "goes over"—for a little while.

* * * * *

But there are some products made as honestly as if all questions of profit were forgotten—the **primary** considerations are sound workmanship and excellence in every detail. Colt, Stetson, Packard, Elgin—and other good names come to mind . . . These products are built to serve well, rather than to sell. But because the best possible service to the consumer is the policy upon which they are built, they **do** sell—and extremely well. For though the buying public is slow to learn, it has a long memory where value is concerned. And as these good products become better known they sell in greater numbers and with increasing ease.

In the ranks of such sound products the fine ARMSTRONG furnace has found a place. An honestly built steel furnace sold on its built-in merit and guaranteed, it has found favor with

home-builders and grown increasingly popular—to the profit of those dealers who sell it.

In just a few short years The Armstrong Furnace Company has become the world's second largest manufacturer of steel furnaces. Now, new additions to the ARMSTRONG line make it certain that the ARMSTRONG dealer will find this year more profitable than ever before. This year he will handle a complete line—a **quality furnace in every size, and for every type of fuel.** He will have a first class furnace to meet **every** condition without buying from any other source of supply. He will need to fear no worthwhile competition. If you believe in selling honest value for sound prices, **and** if you follow the Code in your installations, you are the kind of man that becomes an ARMSTRONG dealer—and it will pay you to investigate the ARMSTRONG dealership now.

THE ARMSTRONG FURNACE COMPANY
502 Maple Street London, Ohio

The **ARMSTRONG**
...boiler plate....
FURNACE





Vernois today, -- anticipates the wants and the needs of Tomorrow

GREATER QUALITY—GREATER VALUE—GREATER PERFORMANCE. These are the reasons VERNONIS sales the country over are sweeping higher and higher.

Vernois

FURNACES

THEIR greater quality is perfectly apparent—once you check over the array of scientific features, once you note the costly furnace calibre of the body design, once you examine the character of VERNONIS-BUILT construction—a furnace that will meet any competition—a furnace that will prove a profit maker for the dealer.



PRIDE in the construction of furnaces is something that can't be figured in the price, something that can't be "bought and paid for."

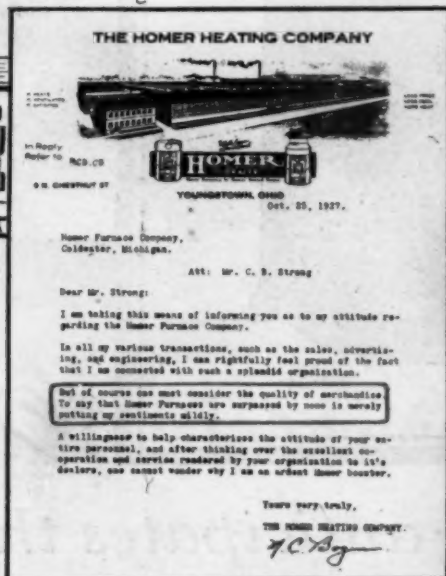
Pride in producing a perfect product has been uppermost in our minds for years.

Because of this high standard our business has grown—likewise the business of our dealers has increased.

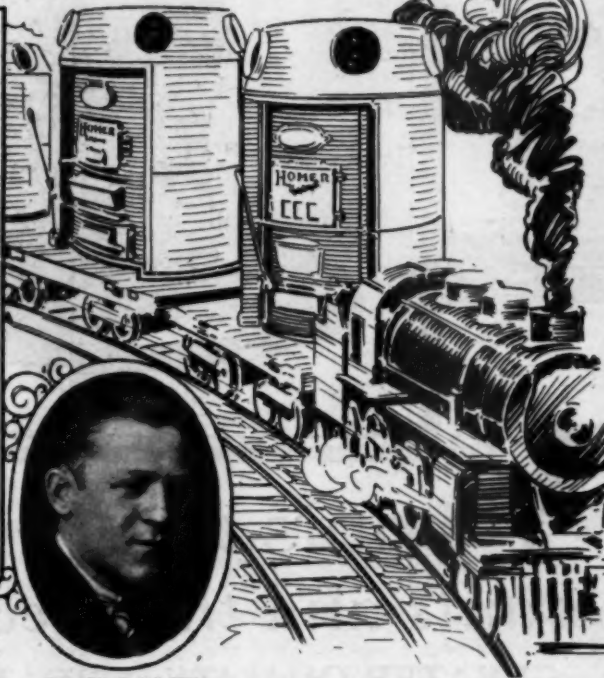
Send for the facts today.

Mt. Vernon Furnace & Manufacturing Co.
Mt. Vernon Illinois

Leading the Train of warm air Furnaces



Mr. M. C. Bogen knows the reason why Homer Furnaces lead the long train of Warm Air Heating Units. The letter above (unsolicited) clearly emphasizes the merits of Homer Organization.



MR. M. C. BOGEN



HOMER "GRAND"

The Homer Organization is one large family promoting the sale of the greatest Warm Air Heating Unit now used to economize in fuel, assure comfort and fit every pocket-book. Members of this family sales organization are so enthusiastic over the Homer Agency Contract that they remain year after year enjoying greater profits thru increased sales. You too can be successful with our assistance and dealer's helps.

Write TODAY and Let Us Explain.



HOMER "ACE"

HOMER—THE COMPLETE AGENCY

Plan with us for a Greater, more Profitable Business

HOMER FURNACE CO., Coldwater, Michigan, U. S. A.

Capacity over
30,000 Furnaces
Annually

*"What's home
without a Homer"*

There's Harmony
in Homer Heated
Homes

HALL-NEAL VICTOR

The Furnace with FINS

Different!

IN this most modern and unique boiler plate furnace, forward-looking heating men have found an opportunity to develop business that is unusually profitable and removed from competition of furnaces that are as alike as peas in a pod.

The Hall-Neal franchise gives you a tremendous sales advantage—no other dealer in your territory can offer a furnace with this distinctive and improved fin construction.

For the man who makes quality installations according to best practice, we have a proposition of vital interest. Write or wire today.

This Demonstrator Sells Your Prospects



With this simple test you can quickly visualize to your prospects the increased heating efficiency of Hall-Neal heat radiating fins. An intensely graphic demonstration. Convinces the most skeptical. Attaches to any light socket. Weighs 4 lbs. including case.

The Hall-Neal man will be glad to demonstrate this handy model to you.



Advantages of this patented construction are:

MORE heat from less fuel. Heating efficiency is increased 20% or more.

A larger volume of air is made to travel with increased velocity through the furnace, insuring an adequate flow to every room.

Healthful heating, because more moist air means purer air. Basement floor space is saved and efficient installations are much easier to obtain, because the compactness of fin radiation permits the reduction of the outside dimensions of the furnace.

HALL-NEAL FURNACE CO.

Heating Specialists for a Quarter Century

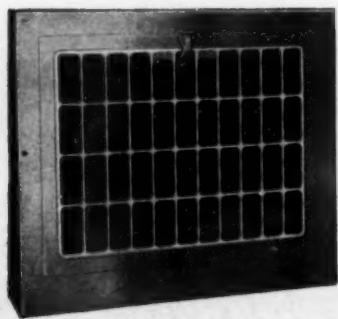
1322-32 N. Capitol Ave.

Indianapolis, Ind.

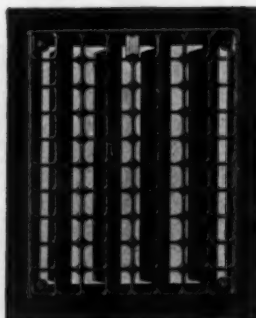
"The Air Capacity Line"

Everything in Registers and Cold Air Faces

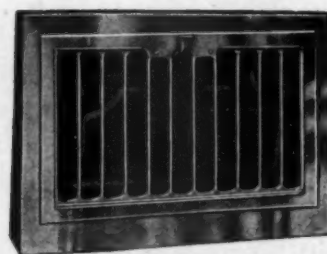
Complete Stocks — Quick Shipments — Profits



No. 160—One-Piece
Baseboard Register



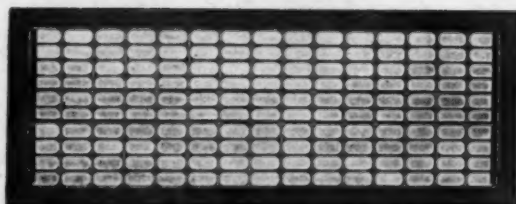
No. 200
Floor Register



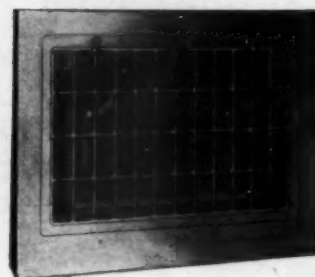
No. 190—One-Piece
Baseboard Register



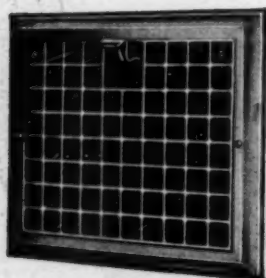
No. 170—Two-Piece
Baseboard Register



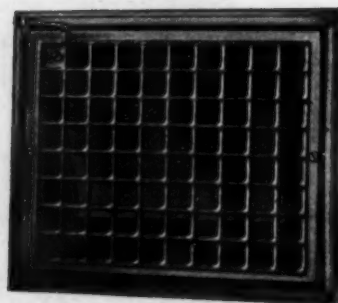
No. 255
Cold Air Face



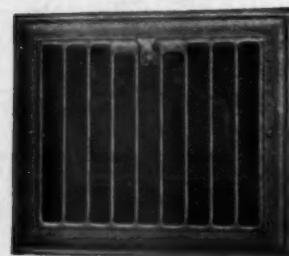
No. 150—Two-Piece
Baseboard Register



No. 340
Sidewall Register



No. 345—Reversible
Sidewall Register



No. 390
Sidewall Register

THE HART & COOLEY MANUFACTURING CO., NEW BRITAIN, CONN.

Manufacturers of a complete line of Ventilating Grilles

NEW YORK
1 East 42nd Street

CHICAGO
61 W. Kinzie Street
WESTERN WAREHOUSE AT CHICAGO

PHILADELPHIA
1600 Arch Street

WARM AIR
REGISTERS



GRILLES

When writing mention AMERICAN ARTISAN—Thank you!

"Here it is"



You
can find what you want
easily and quickly in

The new **MONCRIEF** PIPE and FITTINGS CATALOG

(Just Off the Press)

THE greatest book of its kind ever given out to the trade,—handy size, 7" x 10", punched to hang on nail or hook,—44 pages, listing 1,000 items, showing 145 illustrations attractively and substantially bound. Be sure to get your copy.

The Henry Furnace & Foundry Co.
3471 E. 49th St., CLEVELAND, OHIO

DISTRIBUTORS:

Carr Supply Co., 412 No.
Dearborn St., Chicago,
Ill.
August Bery & Son,
Mack Ave. at Drexel,
Detroit, Mich.
The Henry Furnace &
Foundry Co., Pittsburgh,
Pa.
Frontier Water & Steam
Supply Co., 306 Oak
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Johnson Furnace Co.,
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Warehouse, Troy,
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Wilkes-Barre Hardware
& Stove Co., 15-20 So.
Washington St., Wilkes-
Barre, Pa.
The Crawford Heating
Co., Steubenville, Ohio
The Henry Furnace &
Foundry Co., 923 Sum-
mit St., Toledo, Ohio

Eastern Office,
Room 1306, 11 W. 42nd
St., New York City
E. L. Garner, Manager

Fill out
and mail today



THE HENRY FURNACE & FOUNDRY CO., 3471 East 49th Street, Cleveland, Ohio.

Send me copy of your new big Moncrief Pipe and Fittings book.

NAME

STREET ADDRESS

CITY

STATE

A. A.

This *FRICTIONLESS* construction
is essential to—

BETTER WARM AIR HEATING

WHAT'S the use of all the good work done by the National Warm Air Heating & Ventilating Association—what good are all the facts brought out by the research work at the University of Illinois—if—*WE DON'T USE IT?*

We know that an even warm air flow through pipe that has *no sharp* angles means better heating and less heat loss and that is why HANDY PIPE was improved to give maximum service.

There are other features too and thousands of warm air heating men throughout the country specify HANDY PIPE from their jobbers because they know it's up-to-date and well made.



*Made by journeymen mechanics
in a union shop.*

F. MEYER & BRO. COMPANY
PEORIA, ILLINOIS

A free sample



sent on request

Register
Wood Faces

|| **HANDY PIPE** ||

All Warm Air
Heating Supplies

Say you saw it in AMERICAN ARTISAN—Thank you!

Announcing the NEW IMPROVED ROBINSON HEAT DISTRIBUTOR

HIGH SPEED CUT DOWN FROM 1750 R. P. M.
TO 1065 R. P. M. DELIVERING THE SAME
VOLUME OF AIR AND MAKING POSSIBLE A
PRACTICALLY NOISELESS INSTALLATION.

Installed in the Top of Any Furnace

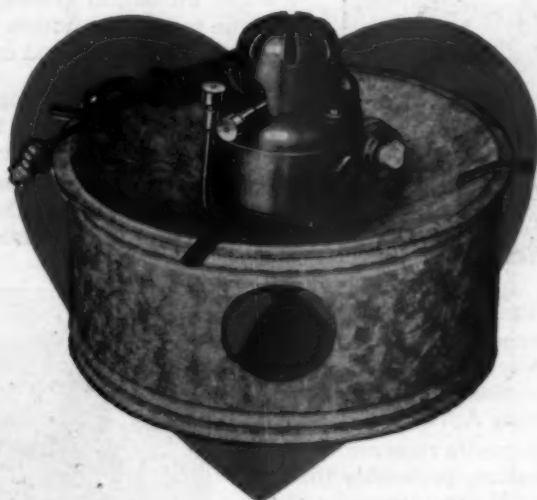
Write Today for Descriptive Pamphlet

**EQUIPPED WITH
THREE SPEED
SWITCH
DELIVERING**

1500 cubic feet of air
per minute on high
1350 cubic feet of air
per minute on med.
800 cubic feet of air
per minute on low

ONLY

1065 Revolutions
per Minute
ON HIGH SPEED



*Average
time required
to install*

2

hours

Order from any of the Following Jobbers:

CASE & MORSE, Seattle, Wash.
CO-OPERATIVE FURNACE SALES CO., Detroit, Mich.
DAYTON-HESSLER CO., Syracuse, N. Y.
DEMMLER-BROS. CO., Pittsburgh, Pa.
FOX FURNACE CO., Elyria, Ohio
HEATING & VENTILATING EQUIPMENT CO., San Francisco, Cal., Portland, Ore.
HENRY FURNACE & FOUNDRY CO., Cleveland, O., Indianapolis, Ind., Pittsburgh, Pa.
M. K. HOKE, Manheim, Pa.
LENNOX FURNACE CO., INC., Syracuse, N. Y.
J. M. & L. A. OSBORNE CO., Cleveland, Ohio
RICHARDSON & BOYNTON CO., New York, Chicago, Boston, Philadelphia, Buffalo, Minneapolis, Newark

The A. H. ROBINSON COMPANY
MASSILLON, OHIO

Mention AMERICAN ARTISAN in your reply—Thank you!

These and 13 others

Equipped with
FORCED AIR



"Running Warm and Cool Air!"

by ONE Indianapolis Dealer, in 1927



YOU need only tell the story of Running Warm and Cool Air to make sales of this improved new heating system. A generation used to having hot and cold water on tap, in getting all the light and power wanted at the touch of a button switch, is just ready and waiting for running warm and cool air.

The L. C. Theile Company, Indianapolis furnace manufacturers and jobbers, installed the Forced Warm Air system—using their own warm air furnaces and Miles Automatic Warm Air Fans—in sixteen better class houses, such as these three. One Miles Automatic Fan demonstration unit in their salesroom did the job.

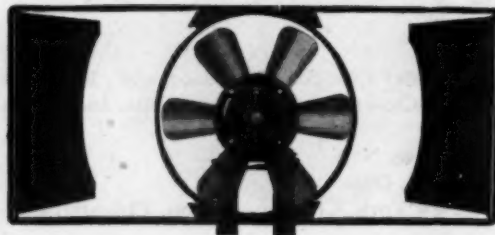
YOU'LL want to add a Miles Automatic Furnace Fan to your warm air furnace installations, thus giving your clients the Running Warm and Cool Air system advertised in the Saturday Evening Post campaign—(See the latest advertisement running April 21st).

All inquiries from these advertisements received by us direct are handed over to our dealers, preferably those equipped with demonstration units. If you are not already handling one of the 116 furnaces made by furnace manufacturers who are cooperating with us, write us for information as to how we can cooperate with you so that we all benefit by this improved system of Forced Warm Air.

THE WARM AIR FURNACE FAN CO., 6521 Cedar Avenue
CLEVELAND, OHIO



Showing general idea
of installations



Miles Automatic Furnace Fan with louvers open and gravity system operating. The touch of a switch or the automatic thermostat closes louvers and starts the operation of Forced Air Circulation—warm in winter and cool in summer.

MILES Automatic FURNACE FAN

TUTTLE & BAILEY SUPER-REGS

REGISTERED U. S. PATENT OFFICE

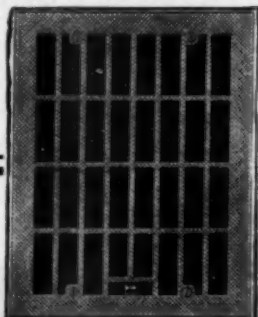
The Season's Sensation!

"COBBLE" COLD AIR FACE

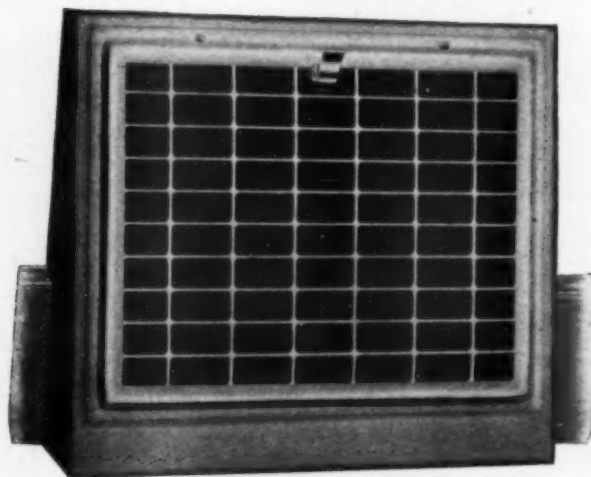


Style C, a CAST air face—strong—durable—abounding in time and labor saving features. Rolled edge and narrow rim eliminate need of floor recessing. "Cobbles" cover entire face.

"COBBLE" FLOOR REGISTER



Style 80, semi-steel. Bevelled bottom obviates necessity for preparing opening to exact size. Fits snugly and evenly all around. "Cobbles" cover face.



Style 902

BASEBOARD REGISTER

WHEN the Style 902 Baseboard Register was introduced recently to match, in design, the famous "Cobble" Line—the trade was quick to recognize its advantages. For this new baseboard register, in conjunction with Style C "Cobble" Cold Air Face and Style 80 "Cobble" Floor Register, presents a really sensational combination from the furnace man's point of view.

These and the almost innumerable other items in the Line of T&B Super-Regs are a great help to the furnace man. He can always get them easily and quickly when he wants them, as T&B Jobbers and branch offices are located at every principal shipping point in the country. This service is the result of over eighty-two years' continuous activity in the warm air heating and ventilating field.

Send coupon for particulars regarding T&B Super-Regs and Service.

TUTTLE & BAILEY MFG CO.

Makers of Registers and Grilles for 82 Years

441 Lexington Avenue

New York City

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CHICAGO

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AA4-28-28

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- ☐ "Cobble" Cold Air Faces and Registers
- ☐ Style 902 Baseboard Register
- ☐ Entire Line of T&B Super-Regs

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THE modern home is designed to be beautiful and in dwellings heated with warm air it is up to you to meet this demand in the registers and cold air faces you install.

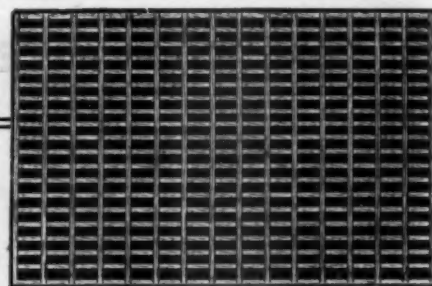
If good heating practice decrees that the cold air face must be in a conspicuous place you can put it there—your choice of AMERICAN Wood Registers will assure you of the neatest and richest looking wood face made.

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*For over
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A New and Better furnace

In the NEW
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"Moist Heat"
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You will find many outstanding selling points, not to be found on any others, and in addition all of the modern features of construction so necessary to the up-building of a successful and lasting heating business.



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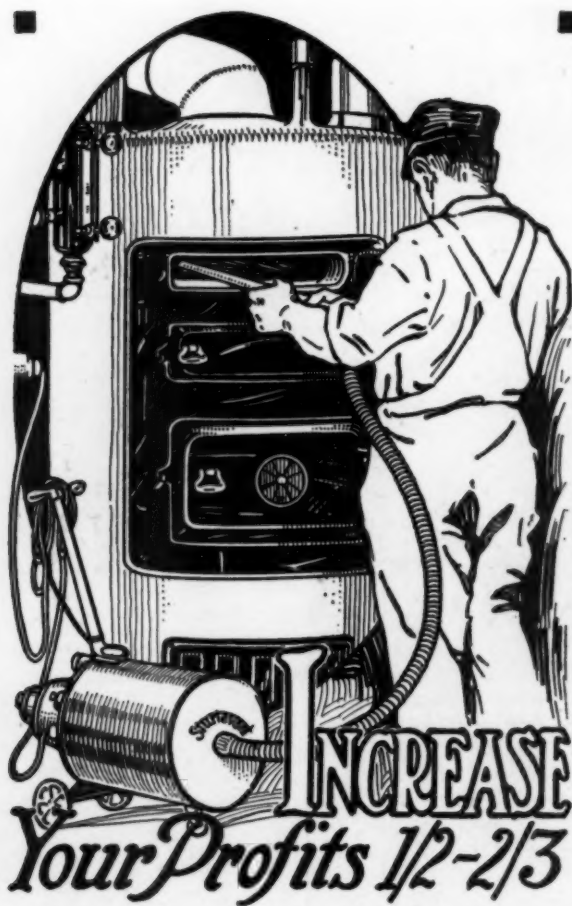
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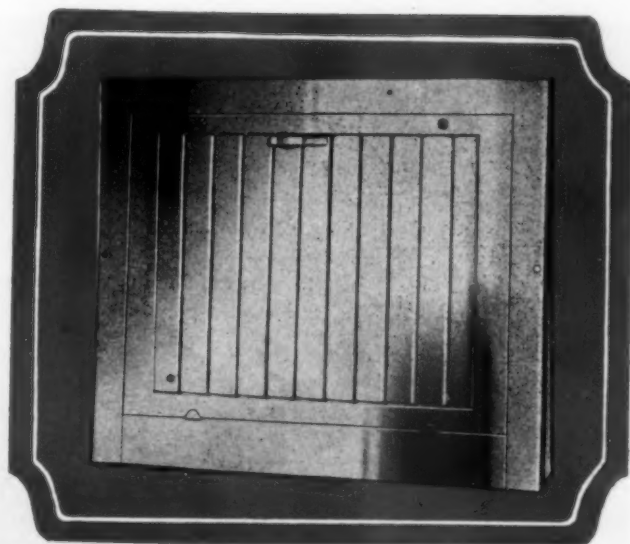
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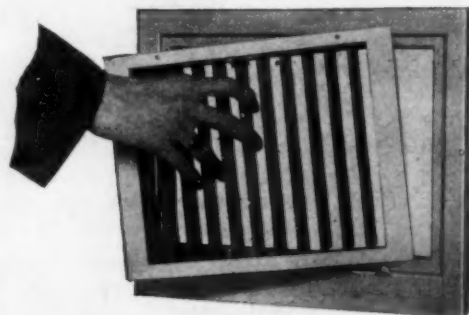
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This New Standard Register meets this description to the dot—it's attractive—easy to keep clean and of fine quality.



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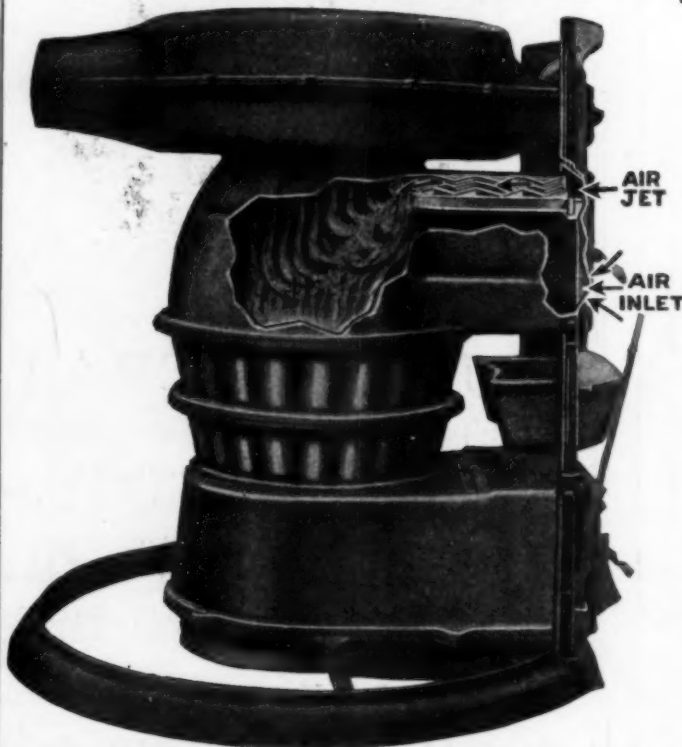
Not merely another "smoke burner"

Different and better because of the new and improved method of preheating the air before it reaches the point of combustion above the fire.

FOLLOW the air travel thru the inlet in the feed door, then into the duct at the top of the feed chute. Here is where the HERO AIR-JET differs—where others cannot follow—because this feature is patented. At this point there are a number of zig-zag baffles which become extremely hot and over which the inflowing stream of air must pass before reaching the combustion chamber.

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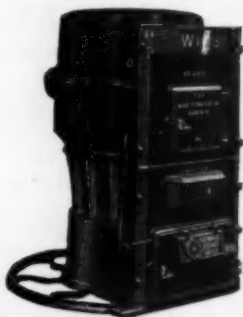
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The Better Furnaces

**New
WISE
Improvements**



THE New Wise Open Dome is improved with the Wise Cellular Firepot.

WISE OPEN DOME CAST FURNACE

It is One-Piece and heavily constructed.

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WISE 20 SERIES CAST FURNACE

**New
WISE
Ideas**

THE Famous Wise 20 Series has added still more fame for itself since this new Patented radiator appeared.

The feed chamber and the top radiator are so constructed as to allow communication between them which brings the opening of the fire flues of the radiator directly into the feed chamber, making the flues readily accessible for cleaning through the upper feed door. The dirt falls directly into the fire-pot, eliminating the necessity of taking the soot out by means of a narrow neck passage. This is a big advantage to the owner as a radiator that is easy to keep clean will be kept clean. And this means increased heating efficiency. This improved Wise Furnace has a New Cellular Fire Pot that provides complete combustion.



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**a
New Steel
Furnace**

To enable you to confine your quality furnace business to one house the Wise Steel Furnace was created. Notice that the Wise Steel Furnace is a better steel furnace having features that make it last longer where others have weak spots.

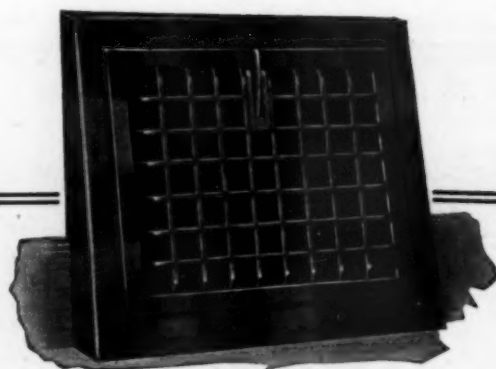
The bottom of the radiator on the Wise Steel Furnace has a Cast Iron Soot Box and Clean Out.

This you know is the big weak spot in other steel furnaces.

The Wise Steel Furnace like all Wise furnaces is Guaranteed high quality. It possesses all the latest scientific heating features and all modern conveniences. It is riveted and welded and has special design grates.

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of all registers, combining air capacity, decorative and concealing features.

Designed to conform with the Standard Code so they fit all standard boxes.

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(Trade Mark)

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"Red Spindle" Dampers have demonstrated their superiority for furnace work. Blades are thick, evenly balanced, with heavy bead, and spindles are generously long. "Red Spindle" is better because it is made of one piece of selected rod—not several pieces spot welded or stamped together. Locking device holds blade rigid with no wobbling—hence blade is firmly set at any position wanted. Patented button prevents lost parts while installing. 3 to 12-inch sizes with round blades, 5/8 to 8-inch sizes with oval blades. It costs YOU no more to install "Red Spindle" dampers, and give your customer greater satisfaction.



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NIAGARA FURNACES

possess a flow of moist warm air heating power---always ready to meet any home demand.

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None Better—Reasonably Priced

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Published EVERY SATURDAY at 620 South Michigan Avenue, Chicago

ADVERTISING AND EDITORIAL STAFF

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Eastern Representatives: M. M. Dwinell, J. S. Lovingham, 156 Fifth Avenue, New York City

Vol. 95, No. 17

CHICAGO, APRIL 28, 1928

\$2.00 Per Year

Table of Contents

Page	Page
Warm Air Heating Department.....163 to 177	Notes and Queries 179
National Convention Report, by George J. Duerr 163	Practical Ethics Between General and Sub-contractors, by Oscar A. Reum..... 180
Combining Warm Air with Oil Heat, by John A. McIlvaine 172	Oxy-Acetylene Welding of Steel Pipe, by S. W. Miller 182
National Association Constitution and By-Laws 174	Random Notes and Sketches, by Sidney Arnold 185
Gas-Fired Warm Air Furnace in Model House 176	Markets 188
Sheet Metal Department.....178 to 186	
Development of Pattern Square Hopper, by O. W. Kothe 178	

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Unit

Efficient and Economical Heating Service

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The No. 380 illustrated has two 20-inch burners and pilot, and will heat 5 to 7 rooms.

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VACUUM PORTABLE ELECTRIC FURNACE CLEANER

for
BIG
PROFITS



THE furnace men who are doing the cleaning business are the men who are getting the majority of repair jobs. Furnace cleaning gets you into the homes—if sick jobs are seen by you you can offer the needed remedy. Your replacement business will increase too.

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A light, sturdy efficient cleaner

THIS is the opening of the furnace cleaning season. Your direct factory competitors will be on the job. They know that furnace cleaning is a business getter—take the tip.

One man can handle the Brillion Furnace Cleaner. Conveniently carried in small car—NO DIRT, NO DUST while cleaning.

It is sturdily built of Cast Aluminum—It operates from light socket—will clean all makes of furnaces and boilers.

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Address

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AND

APRIL and MAY will be busy months for dealers who are on the job with the Wonder Worker Gas Burner.

This apparatus is especially designed for use with Warm Air Furnaces—irrespective of Gas Pressures it insures Even, Perfect Combustion at all times.

This burner heats the radiating surfaces evenly and requires no adjusting. The Wonder Worker Convertible Burner is very easily installed and can be removed in a few minutes.

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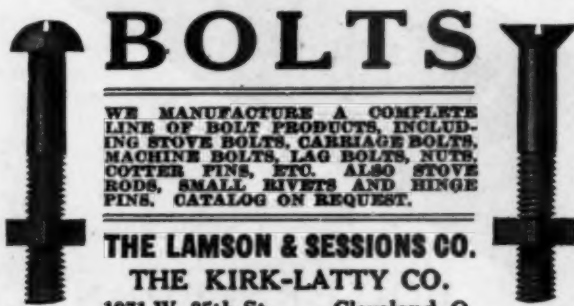
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SMOKELESS

Actual
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it to be highly
efficient.

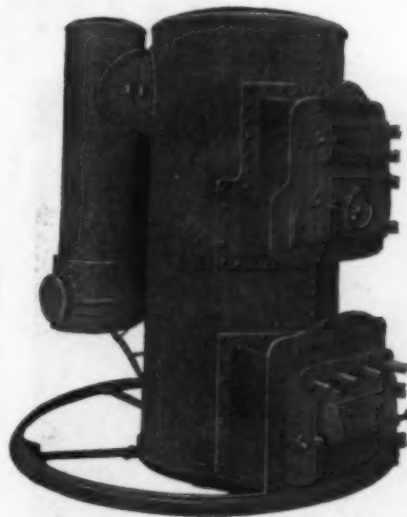
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The new Front Rank Furnace looks good from the very start. Not only that---it will bear your closest examination. And its users will agree with you for 20 years or more.

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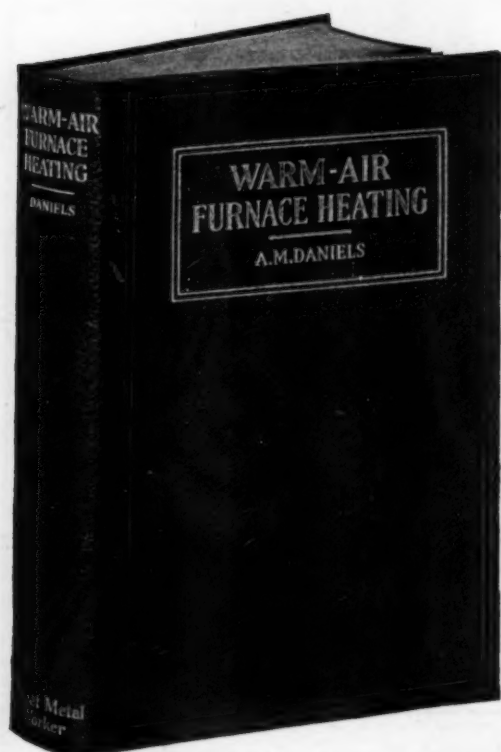


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1888 49 YEARS OF CONTINUOUS SERVICE 1928

MR173

A New Book on Warm Air Heating



Just off the Press—Now ready for you

IT IS the book that thousands have been asking for—a book on Warm Air Furnace Heating that is **UP-TO-DATE**—a book that covers every phase of the subject giving exact data based on research work
Written by A. M. Daniels.

Here is the book that will enable both the experienced furnace man and the student to obtain a working knowledge of up-to-date scientific warm air furnace heating.

Read over the Chapter Headings—notice the complete treatment of the subject.

Many tables are included and some big labor savers in calculating pipe sizes—also many diagrams.

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1. Historical.
2. Typical Gravity Pipe Warm-Air Heating Systems.
3. Types of Warm-Air Furnaces.
4. Details of Furnace Construction.
5. Heat Losses.
6. Effect of Register-Air Temperature, Leader Area and Size of Wall Stack Upon Heating Effect Produced.
7. Insulating Coverings and Their Effect Upon Leader and Wall Stack Operation.
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9. Air Supply to Furnace.
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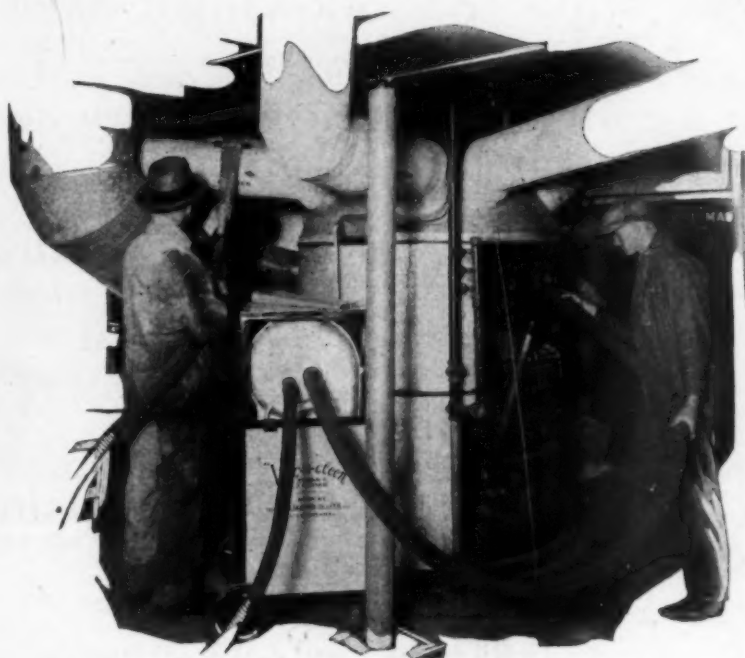
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Street Number.....

Town.....State.....

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This new VAC-U-CLEEN is powered by a 3/4 horsepower motor, and all-aluminum vacuum blower of exclusive design. Arranged to operate on ordinary house electric circuit. The two powerful vacuum hoses may be operated at the same time. VAC-U-CLEEN is contained in a neat cabinet attractively finished in gray and black.



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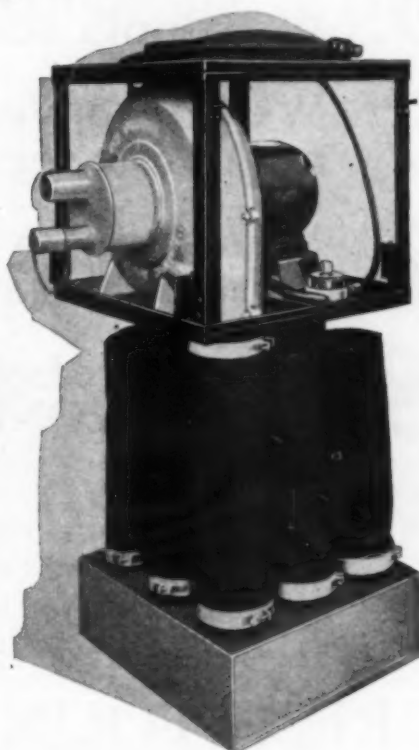
The new VAC-U-CLEEN enables you to service your customers at a profit. It opens the way to a big repair business, gets new business from old customers, introduces you to new prospects, and oftentimes leads to the sale of a furnace.

Its powerful suction draws the dirt out of the furnace in a minimum of time, enabling you to charge a price that is reasonable to the customer and a money-maker for you.

It is designed and built for the removal of soot, ashes or other accumulation from warm air furnaces, hot water and steam boilers, flues, ventilating ducts, bins in hardware stores and factories, bakers' ovens, pipe organs, smoke stacks, or any place where heavy dust and dirt cannot effectively be removed by ordinary methods.

It is portable, collapsible, weighs 200 lbs., and is easily moved on its ball-bearing rubber-tired casters.

If you are interested in a business booster for a slack season—and more business later on—write today. Find out about the Sales Plan.



WRITE OR WIRE—TODAY!

The Williamson Heater Co.

399 West 5th Street

Cincinnati • • Ohio

Announcement

RUMORS and trade gossip are helpful in any business. So that all furnace dealers may know the facts about this Company we state the following:

- 1** We now maintain a continuous heating engineering school for our own traveling engineers.
- 2** We conduct schools for dealers in every state where we sell.
- 3** We supply a method for getting prospects.
- 4** We show dealers how to figure every job by using the B.T.U. Method.
- 5** We supply advertising that we *know* will sell.
- 6** We *do not have* 100% distribution and there are many fine territories still open.
- 7** We believe a Green COLONIAL Agency offers a better way to make higher net profits.
- 8** Finally, we believe we have in our New (Type O) Gas Tight COLONIAL, the finest heat machine now sold.

WRITE us when you are in doubt about Rumors or Gossip or if you want to discuss our plans for increasing YOUR OWN NET profits.

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Mention AMERICAN ARTISAN in your reply—Thank you!



American Artisan

The Warm Air Heating and Sheet Metal Journal



Vol. 95

CHICAGO, APRIL 28, 1928

No. 17



Members of the National Warm Air Heating Association Enjoying Banquet at Stevens Hotel, Chicago, During Convention Held This Week. It Was One of the Largest Conventions Ever Held by the Association. Dealer Attendance Was the Largest Since Dealers Have Been Admitted to Associate Memberships.

National Warm Air Heating Association and Western to Consolidate

*Midland Club and Northwest
Furnace Builders Also Included*

By GEORGE J. DUERR

IMPORTANT in the annals of the warm heating industry were the steps taken by the National Warm Air Heating and Ventilating Association at its 15th annual convention, held in the Stevens Hotel, Chicago, April 24 to 26, to consolidate with the Western Warm Air Furnace and Supply Association, the Midland Club, and the Northwest Furnace Builders' Association. The vote to permit such a consolidation taken at the opening session of the meeting was 32 in favor of the action and none against. This willingness on the part of these four associations to pool their interests and

work as one body not only will reduce duplication of effort, but will give the industry a trade association with power and influence back of it sufficient to make its efforts felt throughout the country.

At the opening of the meeting President Hall appointed E. Stollenmeyer, E. C. Fox, W. D. Cover, and Mr. DeWitt, Sergeants-at-Arms. Mr. Prentice of the Chicago Tribune made the address of welcome, extending to the delegates a warm invitation to make the most of their visit to the city.

President Hall in his annual address spoke very encouragingly

about the outlook for the near future of the warm heating industry. He deplored the fact that manufacturers of warm air heating equipment are not taking full cognizance of the natural advantage which their product has in their sales efforts. He intimated that in spite of the fact that the warm air heating system is a necessity in the home, makers of non-essential products have it all over the furnace men when it comes to making sales. The public is being asked to buy ever more of the non-essential articles, leaving them with just that much less money to spend on the

COMMITTEES APPOINTED BY PRESIDENT C. E. HALL

Nominating

W. G. Wise, Chairman, Akron, Ohio
J. M. Triggs, Huntington, Ind.
Gard W. Smith, Detroit
George Harms, Peoria

Research Advisory

C. M. Lyman, Chairman, Utica, N. Y.
J. F. Firestone, Dowagiac, Mich.
L. W. Millis, Kansas City
H. C. Chevron, Holland, Mich.
W. Gunton, Des Moines, Ia.

Membership

Roger Williams, Chairman, New York, 5 years
Ros Strong, Coldwater, Mich., 4 years
A. S. Robertson, New York, 3 years
C. E. Glessner, Chicago, 2 years
W. L. Rybolt, Ashland, O., 1 year

Standard Code

J. D. Hoffman, Chairman, Purdue, Ind., 5 years
C. M. Lyman, Utica, N. Y., 4 years
E. B. Langenberg, St. Louis, 3 years
J. F. Firestone, Dowagiac, 2 years
W. E. Nesbit, Omaha, Neb., 1 year

Publicity

H. T. Richardson, Chairman, New York, 5 years
W. G. Wise, Akron, Ohio, 4 years
A. P. Lamneck, Columbus, Ohio, 3 years
Ralph Blanchard, New Britain, 2 years
Roy Wasson, Marshalltown, 1 year

Better Business

E. C. Taylor, Chairman, Dowagiac, 5 years
I. L. Jones, Utica, N. Y., 4 years
J. Harvey Manny, Chicago, 3 years
J. M. Triggs, Huntington, Ind., 2 years
George Harms, Peoria, 1 year

Legislative

Central States, Arthur P. Lamneck, Chairman, Columbus, 5 years
New England States, Ralph Blanchard, New Britain, Conn., 4 years
Mid Western States, F. G. Sedgwick, Minneapolis, 3 years
Rocky Mountain States, L. E. Thompson, Denver, Colo., 2 years
Eastern States, A. N. Brayer, Rochester, N. Y., 1 year

OFFICERS ELECTED

President, Charles E. Hall,
Indianapolis
First Vice-president, Charles
F. Seelbach, Cleveland
Second Vice-president, H. T.
Richardson, New York
Treasurer, W. P. Cooke,
Monroe, Michigan
Managing Director, Allen
W. Williams

DIRECTORS

E. B. Langenberg, St. Louis
T. E. Henry, Cleveland
Clarence A. Olsen, Elyria,
Ohio
A. H. Landwehr, Holland,
Michigan

essentials, therefore it is up to the warm air heating industry itself to see that a pro-rate share of the public's dollars are spent in the warm air heating industry.

It was then that President Hall called attention to the consolidation program that had been arranged, in order that greater pressure could be brought to bear to tell the public of the advantages of a properly installed warm air heating system, and also to educate the dealers in all phases of their business, because after all no manufacturer, it was agreed, can sell any more furnaces than the dealer himself sells.

For this purpose a Better Business Committee has been arranged for in the new Constitution and By-Laws of the association. President Hall stated that it is the responsibility of the manufacturer to see that the furnaces he sells get into the basements of the homes they are to enter within a reasonable length of time after they leave his warehouses and also that they enter these basements in a manner that will reflect credit and not disgrace to the industry. The manufacturer is also responsible for the gospel which his salesmen preach, according to President Hall, because after all the salesmen reflect the attitude of their employers.

The Secretary then made his report, which follows:

Secretary's Annual Report.

To the President and Members of the National Warm Air Heating and Ventilating Association:

I respectfully submit the following report of what has been an active Association year.

Again publication of certain details as to the association's activities in the "Monthly Bulletin" has made it possible to omit them from your Secretary's report.

Statistics.

It is to be regretted that the data from the biennial census of manufacturers for the year 1927 is not as yet available. If that were the case it would be possible to compare with reasonable accuracy the production of warm air furnaces as reported from the biennial census of 1925 as

505,162 with the number made in 1927. However, it appears to be the consensus of opinion that less warm air furnaces were manufactured in 1927 than in 1925. It would seem, with the depression in business which has existed, that any reasonable decrease in the number of units made in 1927 should be neither surprising nor discouraging.

The figures from these biennial census are good for comparison but as you know current information would be more helpful and the Association is working towards an activity to that end.

New Membership.

During the present Association year there has been added to our membership roll 55 Associate Members and a total number of these is now 204.

The Active, or manufacturing membership have added 5 during the same period. Consolidations, changes and with-drawals have left a net total of 68 Active Members. The Active Membership representing about 80 per cent of the production in our industry.

Collection Bureau.

1. Number of accounts received during the past year—385.
2. Number of accounts received to date—1963.
3. Amount of accounts received to date—\$292,498.69.
4. Amount collected during the past Association year—\$16,803.50.
5. Amount collected to date—\$155,111.60.

There is no obligation on the part of the membership to send accounts to the Association's collection bureau, but it does seem as if the Active Members should be reminded of this service and a statement made to the effect that it will be found economical and often quite effective as an aid in collecting delinquent accounts.

List of Trade Names.

Your Secretary published a revised list of names used on furnaces in June, 1927. This list contains 485 trade names and has required several years attention to bring to its present fair completeness. Since this publication was made additions and corrections have developed and



Reading Left to Right, Above—Ralph Blanchard, W. G. Wise and I. L. Jones. Below—Group of Side Line Golf Enthusiasts at the Pickwick Suburban Course Ready to See Some of the Warm Air Men Lose Their Tempers and Break Their Clubs

the list will be republished in the near future. The demands for the list are numerous.

Research Activities.

The Association Monthly Bulletin, together with a special Bulletin issued in mimeograph form, under date of July 1, 1927, by my office, has kept the membership informed as to the developments in our society's research work as carried on in co-operation with the University of Illinois.

Our members attending the mid-

year meeting, held in Urbana, Illinois, last December, noticed that the Warm Air Heating Research House had been redecorated inside and out. As a matter of economy in the long run this was done in a first-class manner at a cost of \$700.00. An extra expense, but cared for without any serious difficulty.

The Trustees of the House believe the improvement, which has occurred generally in the surroundings of our Urbana property and

the street paving and lighting done, has added to the value of the property.

The request for copies of Research Bulletins has increased materially during the year. It has been so large as to exhaust our supply of some of the printed bulletins and there is no question but what there has been more demand on all sides for the time and service of the Research Staff. It is unnecessary to report that they have cheerfully and promptly rendered this service, often at considerable inconvenience.

The University Bulletin, Circular No. 15 entitled "Warm-Air Heating Research Residence in Zero Weather," carefully prepared by Professor Day, was distributed to the members from the Secretary's office, May 1st.

What was thought to be a liberal supply of this pamphlet was ordered but the book was so popular that the request for copies has exhausted our supply.

Special credit is undoubtedly due Professor Day for the preparation of this data as it may fairly be considered extra service.

Last year L. W. Millis, member of our Research Advisory Committee, prepared a series of "Simplified Data Sheets" for reference and use in connection with the Standard Code. This booklet was originally published by the Midland Club and later, by consent, reprinted by our Association and copies furnished to our members.

The Measuring Activity

This work was provided for at the Association's Annual Convention one year ago and placed in charge of the Research Advisory Committee, your Secretary acting as the executive member of the Committee. Mr. F. A. Sutherland was employed as a measuring engineer at the conclusion of our April Convention.

The Requests for this service were so numerous that in order to serve the members more promptly, J. F. Quereau was also employed during the summer months as an additional measuring engineer. Both of these men have served you faithfully.

It was the purpose to furnish this service at cost and at this time the balance to the credit of this work to April 1st is \$201.34, indicating your instructions, that the measuring was to be done at cost, has been if anything too closely followed.

To April 1st of this year our official measures have served forty-five companies and measured 604 furnaces. In addition to this re-measurements have been made in three or four cases.

The Standard Code.

Your Secretary has supposed that the requests and orders for copies of the Standard Code would diminish since over one-half million have been distributed, but that is not the case, the public's growing knowledge of the existence of the Code and the installers respect as well as the manufacturers endorsement of it sustains the demand. We are fortunate in having it put in "Ordinance Form" since our mid-year meeting last December. During the year a surprising number of cities and towns have requested copies of the Code with the statement that they are considering the adoption of the Code governing the installation of warm air furnaces. My office has not only furnished copies of the Code requested but have in many cases suggested the best procedure to secure the adoption of the Code.

The Monthly Bulletin.

The Monthly Bulletin is now in its second year as an eight page magazine. Last summer the mailing list was revised but its circulation continues to grow. It is respectfully mentioned that in "Copy" of the Bulletin all phases of the industry are considered and published. The Secretary's office still lacks enough items and papers from our members. If it were possible to have more of these the contents of the Monthly Bulletin could often be improved. May I respectfully and urgently again solicit such items and papers from you. At the present we are publishing 3600 copies each month.

Our Publicity.

To the Secretary one of the interesting developments in this activity during the year has been the in-

creased interest in it on the part of the advertising departments of many of our active members and the better class of installers. It also appears that the public is beginning to realize that warm air heating and our Association have come to stay.

It is possible that our Publicity Committee may not tell you the time and thought they have devoted to the work they have in charge, but as I have been privileged to attend all of their meetings, and these have been frequent, I am taking the liberty of mentioning this to you and assuring you that what they do is a no hit or miss proposition.

I have realized personally the loss of Mr. Arny as our Publicity Director and the benefit of his work and help in our general offices. However, the Publicity Committee and Mr. Arny has planned and prepared matters so well in advance that it has made it easier to carry things along in this department without slighting or neglecting those things which until last January received his full time attention.

Suggestions coming to the Secretary's office have been quite unanimous in urging a better and more complete contact with dealers.

Our membership should know that our space advertising and other publicity have helped materially to give our Association real prominence in the heating world and brings hundreds of letters requesting information of all kind which can not be answered with form letters or by sending some of our printed literature as a reply.

May I add for your information that such misleading "Copy" as to warm air heating which has been published in the public press has been sent to the Association offices and in many cases the editor, if not the author, of such articles has been reached with good results. In other instances articles have been furnished offsetting misleading statements as to warm air. This has certainly been to the advantage of our industry.

During the year a gesture from the railroads indicated they were considering an advance in the classi-

fication of furnaces, L. C. L., but our efforts were successful in keeping it off the docket and with all fairness to our goods we are hoping the transportation companies have dropped the matter. We are under obligations to Mr. M. H. Owen, Traffic Commissioner of the National Association of Manufacturers of Cooking and Heating Appliances, for his help and co-operation to this end.

Gas As a Fuel for Heating.

Items in the Monthly Bulletin have frequently indicated to you the growth of the use of gas as a fuel in central heating plants. Many letters as well as considerable information coming to the Association's general offices of late indicate the use of gas as a fuel will be pushed in a large way and that it is growing in popularity.

Co-operation with Others.

During 1927 we have had the opportunity and pleasure of co-operating more closely with the Sheet Steel Extension Committee and the suggestions and courtesy of Mr. Bennett of that Committee are acknowledged with thanks.

As kindred trade associations, as well as the trade press, have again been generous in their co-operation with our society, perfect harmony can be reported as existing among all of these to you as a result. I also am anxious to say we have never experienced a year when the trade press has given us such fine support.

In General.

It has sometimes been embarrassing to your Secretary not to be able to furnish the advance information requested by members on various subjects. My annual report is an opportunity to state this is not that your Secretary or anyone connected with the Association is indifferent to such requests, but because the desired information data or whatever it may be is not in complete or authentic form.

As the prestige of our association has increased our responsibility has grown. During the past year we have been more frequently quoted as the authority on subjects relative to warm air heating and increased care

has been necessary in committing the association to anything in which there may be any uncertainty. On the other hand this so-called prestige will certainly help the association if it is not abused.

Associations do not progress as ours has without constructive definite programs. This we have had more than ever during the past twelve months and as times, conditions and opportunities have changed we have and are changing with them. I also believe that the past year has proved our variety of activities as no assembly of men can all be expected to be equally interested in one subject or one object.

Our past association year has been an eventful one with every officer, committee and member willing to assist our society and patient with the Secretary. It has been a pleasure to serve under President Hall's direction and I sincerely thank the officers, committee chairman and members for their uniform courtesy and good advice.

Communications from the American Society of Heating and Ventilating Engineers, President David Kinley of the University of Illinois, and the Sheet Steel Trade Extension Committee were read by the secretary.

New members presented for entrance into the association were the L. J. Mueller Furnace Company, Green Foundry and Furnace Company, Hart & Crouse, and the Bergstrom Manufacturing Company.

Hear Splendid Talk on Association Benefits.

Following these preliminaries, a straight from the shoulder talk on what a trade association can do for individual members if given the proper chance was given by R. W. Ruark, Manager of the Automotive Equipment Association, Chicago. At the outset Mr. Ruark stated that the solution of 60 per cent of the problems that present themselves to an industry are actually out of the control entirely of the individual members of that industry. These problems concern themselves with the taxes placed upon the industry by both the federal and state governments, problems in railroad traf-

fic, problems in credit and collections, greater market development and extension and merchandising problems. All of these problems cannot possibly be successfully solved except by collective action, according to Mr. Ruark. The individual regardless of how large and important a place he holds in the industry, has not the power and the resources to do the things that can be done by collective action. In this connection and by way of illustration Mr. Ruark showed the many different ways in which the automotive industry had been benefited by the establishment of the departments within its association which are now functioning so efficiently.

"Competition," said Mr. Ruark "is no longer against the individuals within an industry. It is now in a state where industry is fighting industry for a chance at the consumer's dollars, and the industry which makes the right kind of a plea and makes it loud enough is the one that will be listened to by the public. The multifarious activities within an industry require that that industry have a strongly united organization to force the needs of the industry upon the attention of the powers that be in the legislatures of both the state and the national government. Little can be accomplished in this day of big business without such a power representing the industry. On the other hand the association provides a means of keeping its members in close touch with the happenings in the industry. It keeps them from going stale." As Mr. Ruark so aptly expressed it, "it keeps the individual members running like h - - to keep standing still."

Following Mr. Ruark's splendid talk, E. B. Langenberg presented the proposition to consolidate the four organizations, and presented a new Constitution and By-Laws for the consideration of the convention. A change in the By-Laws was necessary in order to perfect the consolidation.

Speaking in favor of the consolidation before it was put to a vote in addition to Mr. Langenberg were Arthur P. Lamneck, I. L.

Jones, "Buck" Taylor, Harvey Manny, George Harms, Mr. Howard, J. M. Triggs, Judge Watson, and Tommy Richardson.

It was the consensus of these speakers that the new method of collecting dues is the most equitable one that could be devised. Copies of the new Constitution and By-Laws can be had by writing the secretary.

Associate Members Have Their Inning.

In the afternoon session the assembly was broken up into two bodies, the dealers, associate members, and the salesmen going into their session and the manufacturers having their own session.

Arthur P. Lamneck presided at the dealer's session. Mr. Lamneck stated in his opening remarks that the dealer can do more to influence the industry than any other single factor. They have it in their power to make or break the industry by their actions and attitude in it.

Therefore the dealer should come to realize that it is very important that there is more to running a warm air heating business than the mere ability to sell. In addition to that the furnace installer must be able to measure correctly the heating requirements of the home to be heated. He must learn to be able to estimate the cost of the system before he takes the job so that he will make a profit on that job, and equally as important, he must have the courage to pass up the job which he cannot get at a figure high enough to permit him to make an equitable profit.

"The warm air heating system," said Mr. Lamneck, "is the only heating system in existence that will do more than its rated capacity. Its flexibility makes it the finest heating system ever devised. All that is required is that the installer put the job in right to make every purchaser of a warm air heating system a satisfied customer and a champion of the industry. But if these most wonderful systems are not properly installed, the industry cannot blame the public for its disinclination to take on its product. The whole proposition rests with the

installer. No dealer should install a job in which he does not have a reasonable certainty that it will work properly. The manufacturers too are to blame in part for the condition of the industry today, for the simple reason that they are not sufficiently concerned about how their products are installed. Once the furnace is shipped to the installer little attention is given whether it goes in right or not."

Mr. Lamneck stated that it is his honest belief that one million and a

Knowledge of the work that has already been accomplished by the National Warm Air Heating Association is sufficient proof that the association is more than justifying its existence.

With the establishment of the Better Business Committee by that association the entire industry can look for a very important enlargement of the work being carried on. This Better Business Committee will give opportunity for warm air furnace installers to keep in closer touch with the association. Any members of the warm air heating fraternity on the installing end who are not now associate members of the association should lose no time in sending their applications to the secretary. It will pay.

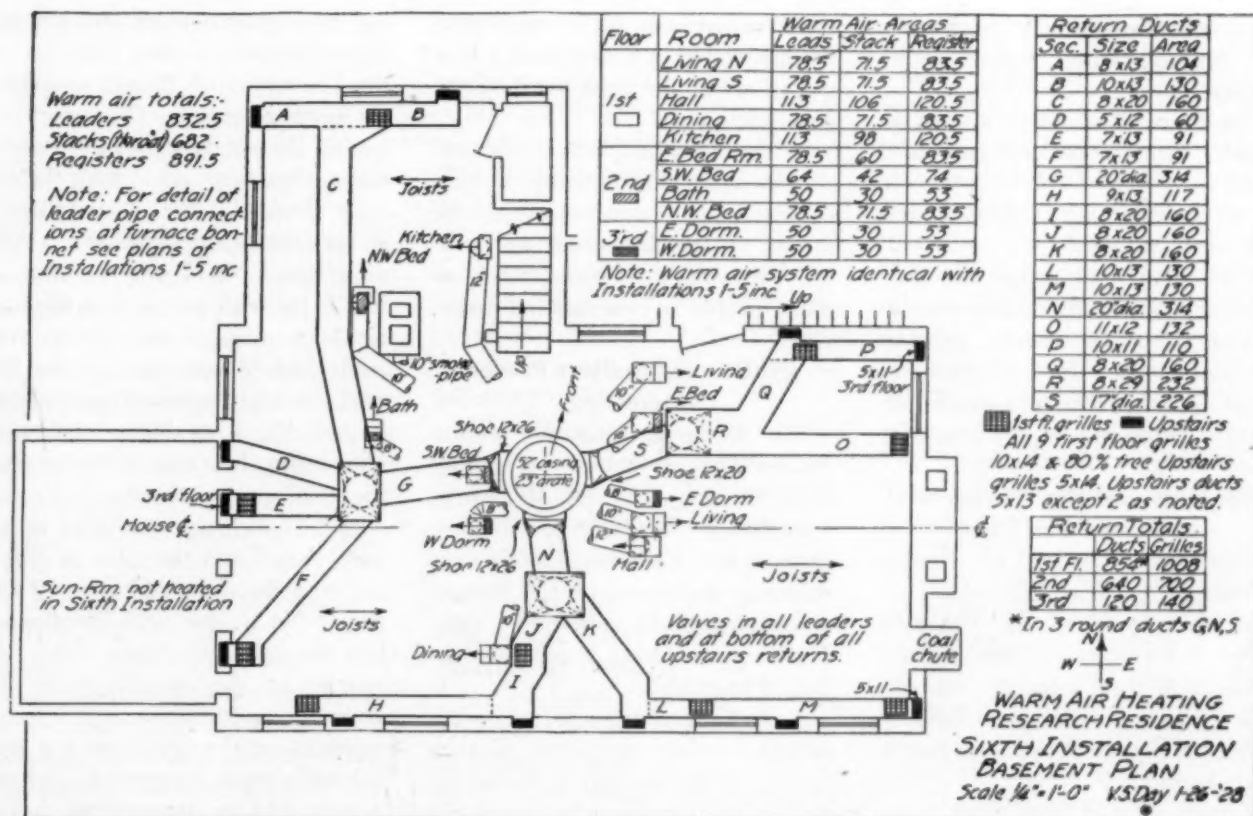
half furnaces a year could be installed, instead of the present 500,000 if every job was put in right. "It should not be necessary," he said, "to have a law compelling the correct installation of furnaces. Every furnace installer should have sufficient pride in his work and in his industry to want to put every job that he installs in correctly, regardless of the legislation existing to that effect. Poor work is a bad advertiser, but as long as there exists fifty opinions among fifty furnace installers on what constitutes the right and the wrong practice in furnace installing, if there is a right way, why should there be any difference of opinion at all?"

L. Wayne Army spoke following Mr. Lamneck. The subject of his topic was concerned with how furnace installers can benefit from the advertising now being done by the national association. At the outset he stated that in the east there is more gain in interest in the warm air heating system than in any other type of heating.

"The matter of price," said Mr. Army, "has been handled in a most absurd manner by the furnace installer." And to back up his statement he cited an instance of where one warm air heating system prospect had refused to buy a warm air heating system from a furnace installer who asked \$350 for it, and then turned right around and purchased a warm air heating system from another dealer for \$850 with a gas heater. All of which goes to prove that the whole problem is a matter of merchandising pure and simple. "The installers," continued Mr. Army, "must have a merchandising policy first of all that is based upon a sound foundation."

And in connection with this policy the installer must do more than send out the material which he receives from the national association. This material must be used in conjunction with other efforts. He stated that the direct mail campaign is capable of giving the best results if properly handled. The customary practice by those who know is to send out three letters within a week or ten days of one another. Then the real work starts. Every prospect must be worked and not be allowed to be dropped until he has definitely decided to buy or is known to be no longer in the market. Any other method of conducting a direct by mail campaign is wasteful.

"The material that is gotten out by the association," said Mr. Army, "should be used, because of the fact that it is impartial; it lends the impression that the sender is really trying to put the prospect in touch with a commodity that will help him to enjoy more comforts; it does not arouse his suspicion that some effort is being made to sell him something that he does not want that is



The Sixth and Final Furnace Installation at the Research Residence, University of Illinois. Cut Shows the Location of the 21 Cold Airs, 9 on First Floor.

an inherent trait of human nature as soon as the advertising carries the label of some manufacturer. Further, the mailing list should be carefully checked to see that no dead names are contained in it. The mailing material costs too much money to be wasted on blind broadcasts.

Reprints of the association's advertising should be used extensively by the installers. Hang them up in the shop, place them in the windows. Take advantage of all items which tend to place the industry in a creditable light and make sure that these items come to the attention of prospective customers.

Furnaces can no longer be sold on the pound of casting basis. Technicalities no longer can be employed to interest the prospective purchaser. He must be sold on appearance and results, in the opinion of Mr. Army. "No one nowadays attempts to sell an automobile on the strength of the steel in the piston rings," said he. "To the automotive industry ease of riding and appearance are the factors which

receive primary consideration, and the furnace installer, too, should adopt a similar line of strategy. He has as much in the way of comfort, health and economy to offer the public as the automobile salesman or the radio salesman has. Why not take full advantage of that fact in his sales efforts, discarding the old worn out and disastrously unsuccessful methods of the past?"

Buck Taylor made a short talk on methods of getting revenue to carry on the work of the association, and presented the secretary with 52 applications for associate membership written by his own dealers and a number which were given to him at the meeting of the Greater Chicago Warm Air Heating Association on the previous evening. He was loudly applauded.

Standard Code Technicalities Explained.

J. F. Firestone presented a technical talk and black board illustration of the derivation of the factors contained in the Standard Code. This address began with an explanation of a B. t. u. and specific

heat, carrying the audience down through the three ways in which heat losses occur from a dwelling; namely, transmission, infiltration, and ventilation. With this analysis Mr. Firestone made the installers acquainted with the fundamentals upon which the Standard Code is based. Having given them the fundamentals, he introduced them to the parents of our old familiar friends, factors 12, 60, and 800; and the multipliers 9, 6, and 5, showing why they came into being and why they are what they are. A truly didactic and helpful analysis of the Standard Code, which was very much appreciated by all who heard it.

Professor V. S. Day was the final speaker of the afternoon session in the dealers' meeting. He dwelt on the furnace rating formula of the national association. The address was an effort to clarify for the dealers and method now in use by the manufacturers of rating furnaces. It concerned itself chiefly with an explanation of the material in Bulletin 141 of the University of Illi-

nois, with the aim in view to place the furnace rating formula in its proper light.

An open discussion followed in which furnace dealers expressed their views very freely on practices in the industry which do not meet with their approval.

The manufacturers too had their meeting. While the dealers were in session the manufacturers were in the room above. F. J. Nichols had some very pertinent remarks to make. These will appear in a later issue.

Manufacturers See Themselves as Others See Them

Professor Hoffman of Purdue University gave a short report on the 5th edition of the Standard Code. The Code is only slightly changed in form from the 4th edition. The committee is working to clarify and make the reading matter more logical.

Edwin Scott of New York spoke on The Other Fellow, or the 40 per cent factor that is in our control. We are paying too much attention to the other fellow. The industry is not taking up enough of the customer's dollar, as the ratio of the number of heating units sold is out of proportion to the number of homes being built and the number of replacements necessary. The average dealer sells only 15 furnaces a year.

So this average dealer needs to be taught selling, estimating, advertising and installing. And it is up to the manufacturer to do this.

The dealer not only needs help with these points from the manufacturer, but the manufacturer should also study installations so that he can give the installer information as to how long it should take to do every part of the installation. Who know this information? No one at present.

In an address, How to Use the Association's Advertising, E. K. Emerson told how to get something for nothing. Advertising has an unknown factor in its pulling power which is accumulative. All impressions are built up from a series of experiences. And when

these experiences cause an action, the power does not stop there. It is passed on by the good word of the purchaser.

If the manufacturers would sell the Association advertising to their salesmen and the salesmen to the dealer, so that he would use it in his windows, this would reach as many people as two national magazines.

Oil Burning Subject Proves Interesting

The Wednesday morning session opened with an address on heating with oil by John H. McIlvaine, President of the McIlvaine Burner Corporation, Evanston, Illinois, representing the American Oil Burner Association at the convention. Mr. McIlvaine's address is published in full on page 172.

E. B. Langenberg reported on the progress made with the Garage Code, stating that this code for the heating of garages with warm air is now in shape for submission to the Joint Code Committee of the National Board of Fire Underwriters. In this connection Mr. Langenberg stressed the fact that the committee had impressed upon them the fact that explosions in garages from accumulation of gas fumes from leaking gas tanks were caused by gas pockets forming along the floor never above 24 inches from the floor. Therefore the heating system which tends to break up these air pockets would be deemed the safest system to use in heating garages, and the forced air system of warm air heating does this very thing.

Mr. Langenberg also stated that efforts are being made to get the Board of Fire Underwriters to endorse the Standard Code. A selling point which Mr. Langenberg emphasized in favor of the warm air heating system is that *houses heated with Standard Code installations can and do command at the present time the lowest possible rate of insurance.*

The remainder of the morning session was taken up by Professors Willard, Kratz and Day of the University of Illinois. Their talks were illustrated with lantern slides show-

ing the research work and the accomplishments of that research at the University of Illinois on warm air heating systems. The work of testing the six types was reviewed and comparisons made with the results obtained. No. 1 installation showed the data obtained with 1 cold air return. No. 2 was the same as No. 1, but with a change in the cold air boot. No. 3 installation was made with 3 cold airs, taking the cold air from the central part of the house. No. 4 installation has 3 cold air returns, but with extensions on the cold airs to outside walls, and with a 1/2-inch per foot slope in the pan. No. 5 was the same as No. 4 but with the slope taken out of the pans. No. 5, the final installation, has the cold air taken from 21 sources on the outside walls—12 from the upper floors and 9 from registers on the first floor but distributed—these converging into the 3 main cold air ducts to the casing. The accompanying illustration shows this final installation.

The afternoon was taken up with reports of the Publicity Committee, given by H. T. Richardson, Chairman, the Research Advisory Committee, by C. M. Lyman, Chairman, the Executive Committee, by I. L. Jones, and the report of the Nominating Committee, by W. G. Wise, Chairman.

E. C. Taylor, Chairman of the Better Business Committee, stated that he had been informed on good authority that one large manufacturer of hot water equipment was putting on 370 resale men to assist the dealers in selling their products. And that the plan of action to meet the low price argument of the furnace men this firm is telling the prospect that its system can be purchased for 20 cents per day and five years to complete the payments. Something to think about.

The next mid-year meeting of the association will be held in Buffalo, New York, and the next annual meeting will be held in Indianapolis, Indiana.

True to its name, the fifteenth "Traditional Banquet" held on the evening of April 25th at the Hotel

Stevens was all that could be asked.

The guests were happy and light-hearted (some light-headed as well), the food was good, Cope Harvey's Orchestra couldn't be beat, Arthur Lamneck did himself proud as toastmaster, and Charles Milton Newcomb entertained us while at the same time he drove home a lesson or two that will do its duty.

Those who sat along the speakers' table could understand why Buck Taylor and Tommy Richardson also had hysterics, but knowing what we do, they couldn't be blamed. We would have laughed, too, as apparently great minds run in the same channel. Too bad the sugar was perfectly square—it might have run truer to form.

Thursday's Session

The meeting opened with a report of the budget committee by E. R. Langenberg, stating that the Board of Directors recommends an expenditure of \$85,000 of which \$50,000 is to be directed to publicity, the remainder going to the various activities of the association.

President Hall read an advertisement taken from a Louisville, Kentucky, daily paper in which a furnace installer advertised a warm air furnace, a flue pipe, and a Standard Code installation all for \$110. And the beautiful part of it all was that the purchaser was not required to pay for the job until fall.

A vote of thanks was given the members of the various committees for their splendid work, and special mention was given the local committee consisting of Harvey Manny and Charles Glessner for their work in discharging the details of program arrangement and entertainment.

The meeting was then turned over to the research staff of the University of Illinois and discussion of the warm air research activities was continued from where it had been dropped on the day before. One slide was shown, characterized by Professor Willard as the \$25,000 slide, which has an important bearing on the relation between ash, volatile matter and B.t.u. and their relation to fuel consumption. This

material should be watched for when it is released by the university.

The effect of elbows on the efficiency of the furnace was reviewed. The results produced showed that a furnace whose efficiency was 55 per cent with one elbow located where the warm air duct enters the stack. Placing 4 elbows in the warm air duct, but without changing its original length, reduced the efficiency to 55 per cent.

The afternoon of Thursday was taken up in various forms of recreation, many of the members availed themselves of the opportunity to play golf.

Old Guard Holds Annual Meeting at Biloxi.

At the meeting of the Southern Hardware Jobbers Association held at Biloxi, Mississippi, on April 17, R. P. Boyd was made Sergeant-at-Arms, succeeding the late Henry H. Beers, who had served in this capacity from the first meeting in Atlanta, thirty-nine years ago to his death, last May.

Mr. Boyd in telling about the meeting of the Old Guard Southern Hardware Salesmen's Association also held at Biloxi, at the same time writes:

"At this meeting the Old Guard celebrated its twentieth anniversary having been organized in Hot Springs, Arkansas, June 10, 1908, with forty-six charter members; of these only eighteen survive, twenty-five having passed away and three resigned.

"Our meeting was very successful with forty-two members present. The usual routine was carried out followed by the banquet at which N. A. Gladding lead the singing. The committee in charge of the banquet, Hugo Weideman, Henry Archer, Fred Huggins and Sheffield Clark saw to it that we all had a wonderfully good time. Mr. Leslie Stratton, President of the Jobbers, was our guest. All were sorry, Miss Cohn, our honorary member, was not present.

"During the year we suffered the loss of two valuable members;

Harry H. Beers and John P. Cotchett.

"Harry H. Beers passed away at his home in Richmond, Va., May 15, 1927, in his eighty-seventh year. Mr. Beers had been the first President and Chairman of the Advisory Board up to the day of his death. He was of unique personality and an accomplished salesman and a man of the highest integrity.

"John P. Cotchett died at Saranac Lake, N. Y., October 21, 1927, after a brief illness. He was one of our newer members, was a fine salesman and had a great many friends who mourned his loss.

"Three new members have qualified this year: Paul H. Reynolds, Asheville, N. C., with the Gendron Wheel Company of Toledo, Ohio; M. A. Cook of the Southern Plow Company, Columbus, Georgia, and L. L. Sullivan, manufacturers' agent of Atlanta, Georgia.

"The association now has a full quota of members with a lengthy waiting list.

"The report of the treasurer shows that the association is in good financial condition, free from debt and with a cash reserve above the limit.

"The new officers of the Old Guard are:

"President, George H. Hillman; First Vice President, N. A. Gladding; Second Vice President and Secretary-Treasurer, R. P. Boyd; Executive Committee, J. T. Skelly, Hugo Weideman, E. J. Newey, James Hutchinson, Charles P. King and J. M. Wood."

Bad Bill Collector Collects by Doing a Little Broadcasting

With the vast increase in the use of various installments, deferred payment and credit plans have come added collection difficulties. For the few who drop behind in payments and fail to respond to polite and even caustic collection letters, a Pittsburgh firm resorts to a little broadcasting. A man drives to the door in a bright red car carrying a sign in the largest possible letters, "Bad bill collector."

COMBINING WARM AIR WITH OIL HEAT

By JOHN H. McILVAINE*

AT THE American Oil Burner Association convention here three weeks ago, we were fortunate in having on our program Mr. Stockwell representing your association. He read us a very interesting and instructive paper on combining warm air and oil heating. On behalf of our association, I want to thank you for co-operating with us in this way. Fundamentally we have the same ultimate objective. When you install a complete warm air circulating system, you are simply reducing labor and increasing comfort. You eliminate an immense amount of labor and dirt by concentrating into one place the work of firing and cleaning several fireplaces or stoves scattered all over the house, and you afford greater comfort and health by controlling the heat and ventilation.

Our work continues along exactly the same line. A properly functioning oil burner eliminates all labor and dirt, and gives a control of temperature impossible to obtain with coal firing. The demand for automatic heat is steadily increasing. To any one who has enjoyed its comfort and convenience, it is unthinkable to return to the drudgery and dirt of coal. The consensus of the leading engineers engaged in the production of oil is that there are ample resources to furnish an entirely adequate supply of oil fuel for many generations. We have given this part of our problem our intensive study, and we have every reason to believe that oil heat is here to stay. Because we must utilize your apparatus, it seems logical to us that we should work together as closely as possible in the laboratory and in the field to solve the many problems of mutual interest.

Mr. Stockwell in his paper

brought out the lack of knowledge on the part of the furnace men and the oil burner men of the use and principles of each other's apparatus. This ignorance has been very costly. We have both lost a great deal of business on account of it, but there should be no excuse for this deplorable condition in the future. In fact conditions are infinitely better now than they were a year or so ago. About that time we brought out the first edition of our hand book of "Domestic Oil Burn-

In this article John H. McIlvaine has pointed out the common interest which exists between the oil burner industry and the warm air heating industry.

He has further shown the warm air heating industry why it is to the mutual advantage for both of these industries to cooperate very closely with each other, in order that the public can obtain the best possible service from the products which these two industries have to offer.

A thorough study of this article will prove highly beneficial to every warm air furnace installer interested in the new era in warm air heating.

ing," which contains your Standard Code in full. This code has been of great benefit to us, and every oil burner man worthy of the name is familiar with the fundamentals of this code and knows how to apply it.

Furnace Designed for Oil Burning Out Soon

As an auxiliary to your code, and based on it as well as on similar codes used by steam and hot water heating men, our hand book contains a heating survey form. The leading oil burner manufacturers either use this form or one of their

own modified for their own equipment, and they insist that all data be furnished as called for before accepting each job. Where changes are found necessary, they are recommended and a competent warm air, steam or hot water man is called in to put the plant in proper operating condition.

We are stressing the importance of this preliminary work on the part of our members and dealers and the necessity of accurate knowledge of heating systems on their part to enable them to render real heating service. With this knowledge we should be able to avoid many of the unsatisfactory installations made in the past. The present question is how can we both improve our apparatus so as to combine the many advantages of warm air and oil heating. As far as you are concerned, the design of the furnace itself is the most important item to consider.

Many boiler manufacturers have already either modified some of their models or brought out new ones designed specially for oil burners. Several oil burner boilers are being marketed with great success. Mr. Stockwell told us that he looked to see several furnaces designed for oil exclusively to be put on the market very shortly. This is certainly co-operation on your part and we feel that those of you who enter this field will be amply repaid.

Combustion Chamber Must Conform to Oil Flame

This design should offer no great difficulties. Fortunately for us both oil burned correctly at the rate of one gallon per hour requires approximately three cubic feet of combustion space. Thus a furnace which has three square feet of grate area with a height above the grate of two feet can accommodate the combustion of two gallons of oil per hour. Assuming equal efficiencies, this amount of oil delivers approximately the equivalent of 21

*Address by John H. McIlvaine, President McIlvaine Burner Corporation, Evanston, Illinois, delivered at the convention of the National Warm Air Heating Association, Stevens Hotel, Chicago, April 24, 1928.

lbs. of hard coal which checks with your rate of combustion of 7 lb. of coal per square foot of grate per hour.

The shape of the combustion chamber should conform to the shape of the oil flame or vice versa. There are three common types of oil flames, the vertical, the circular, and the horizontal. Here is an apparent difficulty, which is easily overcome, however, as by suitable baffling and adjustment most oil flames can be distributed in any way desired. The indirect heating surface is of greater importance.

Your ratio of 20 ft. of heating surface to one foot of grate area should be a minimum to keep stack losses as low as possible. Preferably this ratio should be higher. This of course will increase the cost of the furnace, but not necessarily in direct proportion. It is not necessary for you to increase your overall dimensions in direct proportion to the heating surface because you can reduce the cross section of your flue gas passages as with our mechanical draft you no longer have to draw the air through a thick bed of coals. You can also employ the revertible flue principle to great advantage.

The hot gases in this type of furnace rise immediately to the top near the leaders where the greatest heat is needed, and as they cool they descend to the smoke pipe outlet at or near the grate line. Of course, there is a limit to the reduction of flue areas with natural draft burners or burners of the intermittent type. With the latter type, sufficient cross section must be allowed to take care of starting when the furnace and stack are cold. One boiler manufacturer uses flues of small cross section and revertible, but he furnishes a by-pass and thermo-damper to short circuit the gases to the stack if the temperature is below a predetermined minimum.

We were very much interested to learn that efficiencies of 80 per cent and over were obtained with warm air furnaces by the use of circulating fans. These can be connected to operate intermittently with burn-

ers of the on and off type, or continuously with continuous flame burners. This is just one example of the benefits to be derived by exchanging ideas and the knowledge gained in experimental and field work.

Mechanical Requirements of Burner Quite Exacting

Now consider our equipment. To be satisfactory it must be mechanically reliable, quiet in operation, and the flame must be properly applied and controlled. We have found by experience that the average home owner is quite helpless. He will not even oil the burner motor, the back bone of the whole equipment, or if he does, he uses the wrong kind of oil. The motor manufacturers have eliminated this source of trouble by developing motors which will run a year or more continuously without oiling. The home owner can not be depended upon to clean the strainer, so we furnish him with a large one that will run all season. For his protection we submit our apparatus to the Underwriters' Laboratories for impartial judgment. Individually we have spent anywhere from a few hundred dollars to several thousand dollars, to redesign our equipment to comply with their standards. Competition forces us to have their approval. The approved equipment does not increase insurance rates. Reports from many states show that fire hazards are actually less with oil burners.

Fire Hazard Actually Reduced by Oil Burner

A prominent fire prevention expert, John G. Gamber, State Fire Marshal of Illinois during the last two administrations and past president of the National State Fire Marshals Association, says:

"Careful study of all makes of oil burners since the inception of the industry shows that fully automatic burners using the better grades of burning oil actually reduce the fire hazard when compared with coal. No soot or sparks are formed. This eliminates all roof and chimney fires, which alone are responsible for more than 75 per cent of the

dwelling fires. Also the handling of hot ashes in wooden receptacles is unnecessary.

"In fact, a credit on insurance premiums should be allowed owners of oil burners. With more widespread use, they are rapidly becoming an important protection that is certain to reduce fire losses in the country."

In some localities the coal dealers have been particularly active in spreading false propaganda about oil burner fires. In other localities, however, they have done the sensible thing and now sell oil. Witness the Consumers Company of Chicago. Of course, no machine will run indefinitely without attention and may not always function properly. Consider the vast improvements made in automobiles during the last twenty years. Yet they all require care and repairs. You may say that their case is different because of the abuse to which they are subjected. That is true, but they are designed to stand that abuse and the ones that can not do so pass out of the picture. The same is true of oil burners. There are many of them on the market right now that are considerably more intelligent than the average home owner, and a great deal more reliable than the average furnace man, although that is no great compliment.

We have also made great progress in reducing the noise of operation and combustion. There are several burners on the market now that are entirely satisfactory for warm air heat and we look for still further development along this line.

Avoiding Stoppage of Circulation

The oil flame should never impinge directly on the furnace walls. The walls should always be protected by a lining of fire brick or clay. The application of the heat from the flame depends on the shape of the combustion chamber. Primarily the heat should be applied to the surfaces heated by contact with the bed of coals. If the heat is applied at a point lower than the grate line, the circulation may be stopped, and

if it is applied too high, some of the heating surface of the combustion chamber will be ineffective.

As Mr. Stockwell pointed out with steam and hot water jobs the metal parts are held to a safe temperature by the steam and water which they enclose, but with warm air furnaces the metal can rise in temperature nearly to that of the burning gases. This of course cracks and warps the metal out of shape and gas leaks occur.

How to Reduce Excessive Heating

There are three methods of overcoming this excessive heating and subsequent cooling. The size of the flame may be reduced for normal operation and the full capacity of the burner only used in extreme weather. Another method is to use as great a mass of fire brick as possible,

so as to absorb some of the intense heat during the firing period and give this heat out again during the off period. This fire brick must always be out of range of the flame itself, because during the beginning of the firing period these bricks are cool and will quench the flame if it impinges upon them. Carbon may be deposited and some of the combustible gases will pass up the stack unburned, reducing the efficiency. This point should be considered by you in designing the combustion chambers of your furnaces so as to accommodate this fire brick.

The best method of eliminating this alternate heating and cooling is to burn the oil continuously, gradually increasing or decreasing the rate of combustion in accordance with the demand for heat. In this way the continuous circulation of

air is maintained, as with the steady coal fire, affording better ventilation and more even temperature throughout the house. There are burners on the market embodying this principle of operation, which allows the warm air heating plant to take advantage of many points of superiority.

The fact that a warm air installation can be sold for about two-thirds the price of a good hot water job leaves the balance to go toward the purchase of our equipment. For this reason and because we recognize the great advantages you have in air conditioning, quick temperature control, and simplicity of operation, we are very anxious to do whatever we can to make our equipment acceptable to you and to cooperate with you in every way possible.

National Warm Air Heating Association Changes Constitution to Permit Consolidation

Provision Also Made for Better Business Committee to Iron Out Difficulties

Constitution and By-Laws Constitution.

Article 1.

Name.

THIS organization shall be known as the National Warm Air Heating Association.

Article 2.

Purpose.

The purpose of this organization shall be: First, to conduct research; Second, to promote proper installation of Warm Air Heating Systems, and Third, to develop the business through systematic education in every department of the industry.

Article 3.

Membership.

Active: Manufacturers or jobbers of warm air furnaces or any component part of warm air heating systems shall be classified as Active Members.

Co-operative: Individuals, corporations and firms interested in warm air heating but not manufacturers or jobbers of any component part of warm air heating systems, accessories or supplies used in connection with the manufacture or installation of them, also dealers, heating engineers, architects and salesmen, shall be known as co-operative members and shall be non-voting.

Article 4.

Officers.

The officers of this organization shall be a President, a First Vice President, a Second Vice President, a Managing Director

and a Treasurer, and a Board of Directors, consisting of all the officers, and not more than four other members of the association, one of whom shall be the retiring president, who shall act as chairman of the Board of Directors. The same to hold office for one year, or until their successors are duly elected and have qualified.

The Treasurer and Managing Director shall be bonded officers, the amount to be determined by the Board of Directors and paid for by the association.

The Managing Director shall be a paid official of the association. He shall be selected by the Board of Directors and his compensation determined by them.

Article 5.

Annual Meeting.

The annual meeting shall be held in April of each year and at such place as may be designated by the Board of Directors.

Article 6.

Revenue.

The annual budget or amount of expenditures contemplated by the association shall be determined by the association at its annual meeting, and in no case shall any money be expended or obligations incurred in excess of the budget agreed upon.

Article 7.

Dues.

For the purpose of carrying on the work of the association all Active Members, excepting jobbers, shall pay to the association annually the sum of thirty-six

(.36) cents per \$100.00 (One Hundred Dollars) of net annual sales of warm air furnaces, their component parts, accessories and supplies, of members own manufacture as determined by his sales for his preceding fiscal year, same to be payable quarterly on May 1st, August 1st, November 1st and February 1st of each year.

The annual fee for each fiscal year, April 1st to March 31st, for all other classes of membership shall be as follows:

Jobbers' membership	\$ 150.00
Co-operative membership	10.00
Canadian membership (group)	1,000.00

Prior to March 1st of each year a statement of net sales of furnaces and fittings and registers and accessories of members own manufacture, certified to by a certified public accountant, covering the preceding fiscal year, shall be furnished the Managing Director. All such information to be held strictly confidential.

All assessments shall be binding for the year they are pledged.

Article 8.

Changing Constitution.

This Constitution may be changed by a three-fourths vote of the members present, after ten days notice of such proposed change, which notice shall accompany notice of the holding of the meeting at which such action will be taken.

BY-LAWS.

Duties of Officers.

Section 1. (a) It shall be the duty of the president to preside at all meetings.

(b) It shall be the duty of the First Vice President to act for the President and the duty of the Second Vice President to act in the absence of both.

(c) It shall be the duty of the Managing Director to keep record of the minutes of the meetings and to perform such other duties as may be assigned him by the President and Board of Directors from time to time.

(d) The Treasurer shall receive and disburse all funds of the association as provided in Articles 6 and 7 of the Constitution. The Managing Director shall prepare certified voucher and write Association check, attaching to the voucher all bills, and forward these papers to the President. The President shall approve the voucher if correct and counter-sign the Association check. All papers to be then forward to the Treasurer, who will retain the voucher for his records, sign the Association check and forward check and statement or bills to payee for receipt. The Treasurer shall maintain with the Managing Director a Petty Cash Fund of not more than \$1,000.00 for emergency use. Vouchers covering the use of same to be forwarded in the above manner.

(e) The Board of Directors shall have general supervision of the affairs of the association.

Election of Officers.

Section 2. The first officers shall be elected at the organization meeting and thereafter annually at the Annual Meeting of the association in April of each year, and shall hold office until their successors are elected.

Regular Meetings.

Section 3. The annual meeting shall be held in April. The semi-annual meeting shall be held in December.

Attendance Fees.

Section 4. The sum of \$50.00 is to be refunded to the Active Member on his record of full attendance at all sessions of the Annual and Semi-Annual Meetings as recorded with the Managing Director. This shall be accomplished as follows: Each member shall deposit in a box, provided for that purpose at the entrance of the meeting room, a card with his name on it. When the meeting opens this box shall be removed by the Managing Director. When the meeting closes, the box will again be placed near the door and each member will again deposit a card with his name on it. It shall be necessary that both cards be in the box in order to receive credit for attendance at each session of the entire meeting. Cards to be furnished by the Managing Director.

Special Meetings.

Section 5. The Board of Directors may call special meetings at any time and shall call such meeting whenever so requested in writing by not less than five (5) members.

Quorum.

Section 6. One-fourth of the Active Membership shall constitute a Quorum at any regular or Special Meeting of the Association. A majority of any committee shall constitute a Quorum of that Committee.

Voting Power.

Section 7. Every Firm or Corporation having Active Membership shall be entitled to one vote.

Each active member shall certify to

the Managing Director the name of his official voting representative and alternate. Blanks for this purpose to be mailed by the Managing Director to all active members ten days prior to any regular or special meeting.

Deciding Vote.

Section 8. Any question coming before the meeting shall be decided by a majority of the members present.

Withdrawals of Members.

Section 9. Any member who desires to withdraw from this Association shall give thirty days' notice in writing to the Managing Director and until the expiration of said thirty days he shall be bound by the prevailing rules of the Association. The withdrawal of any members from the Association terminates his active participation in the affairs of the Association but all assessments within that fiscal year shall remain in force and payable.

Delinquent Members.

Section 10. Members in arrears ninety days from date of the Association invoices, may be dropped from membership at the discretion of the Board of Directors. Members dropped for non-payment of dues and assessments shall not be reinstated until all such arrears have been paid.

Territory.

Section 11. For the purpose of holding regional meetings, the United States and Canada shall be divided into eight zones, to wit:

<i>New England.</i>	<i>Southern.</i>
Maine	Virginia
New Hampshire	Tennessee
Vermont	North Carolina
Massachusetts	South Carolina
Rhode Island	Georgia
Connecticut	Florida
<i>Eastern.</i>	Alabama
New York	Mississippi
New Jersey	Texas
Maryland	Kentucky
Delaware	Arkansas
Dist. of Columbia	Louisiana
Pennsylvania	<i>Mid-Western.</i>
<i>Central.</i>	Oklahoma
Michigan	Missouri
Ohio	Kansas
West Virginia	Nebraska
Indiana	Iowa
Illinois	Minnesota
Wisconsin	North Dakota
<i>Rocky Mountains.</i>	South Dakota
New Mexico	<i>Pacific.</i>
Colorado	California
Wyoming	Washington
Montana	Oregon
Arizona	Nevada
Utah	Idaho
Idaho	<i>Canadian.</i>

Divisions.

Section 12. For the purpose of holding group meetings either at regular, special or zone meetings, the various groups shall be divided as follows. These groups may be extended as growth warrants:

Manufacturers of Furnaces.
Manufacturers of Pipe and Fittings.
Manufacturers of Registers.
Manufacturers of Accessories.
Advertising Managers.
Jobbers.
Dealers.
Salesmen.
Engineers.
Credit Managers.

Statistics.

Section 13. Statistics covering the entire industry shall be assembled by the Managing Director and issued to the Bureau of Census of the Department of Commerce, of the United States, and to all contributing members. Rules governing the assembling of these statistics shall be established by proper resolution presented by the Board of Directors to the Association.

Committees and Duties.

Section 14. All Committees shall be appointed by the President. At the Organization meeting the retiring President shall appoint and designate the time of office for each member on the Committee and thereafter the President-elect shall appoint one new member to each Committee for a term of 5 years. Such appointment shall follow as closely as possible equal geographical representation. The following Standing Committees with an outline of their duties are hereby established.

1. *A Research Advisory Committee*—consisting of not more than 5 members. The duties of this Committee shall be to supervise, direct and co-ordinate all research work.

2. *A Code Committee*—consisting of not more than 5 members. The duties of this Committee shall be to co-ordinate and draft into Code and Ordinance Form such principles as are established by the Research and Practice of the Association.

3. *A Publicity Committee*—consisting of not more than 5 members. The duties of this Committee shall be to formulate plans for Advertising, Publicity, Forms, Pamphlets and all literature distributed by the Association.

4. *A Better Business Committee*—consisting of not more than 5 members. The duties of this Committee shall be to co-ordinate and direct all field activities, group meetings, zone meetings and to unify plans of all Committees into a working basis for presentation to Manufacturers, Dealers and Consumers.

5. *A Membership Committee*—consisting of not more than 5 members. The duties of this Committee shall be to secure members for the Association.

6. *A Legislative Committee*—consisting of not more than 7 members, one from each zone. The duties of this Committee shall be to promote and direct Legislation.

7. *A Nominating Committee*—consisting of not more than 5 members. This Committee to be appointed by the President at the first session of the Annual Meeting. The duties of this Committee shall be to prepare a list of Nominees for all elective officers for the ensuing year. Before presenting this list to the convention for action, this Committee shall secure the consent of the candidate to serve, if elected.

Committee Reports—Each Standing or Special Committee shall, prior to the Annual and Semi-Annual Meeting, submit in writing to the Board of Directors, a written report of work accomplished, together with planned activities for the future, such report to be approved by the Board of Directors before being submitted to the Association.

Nominations by Members.

Section 15. Nominations other than those submitted by the Nominating Committee may be made for any of the elective offices, when signed by not less

than ten members in good standing and filed with the Managing Director at the Annual Meeting. It shall be necessary, however, that the candidates so nominated shall give their consent to serve, if elected.

Vacancies.

Section 16. The President shall have authority to fill all vacancies on appointive committees and the Board of Directors shall fill all vacancies on the Board.

Credit and Collection Bureau

Section 17. A Credit and Collection

Bureau shall be established under the direction of the Managing Director, who shall establish working rules for the collection and dissemination of credit information from and to active members contributing.

Changing By-Laws.

Section 18. Additions to the revisions of these By-Laws shall be made by a three-fourths vote of the members present, after ten days' notice of such proposed change, which notice shall accompany notice of the holding of the meeting at which such action will be taken.

Order of Business.

Section 19. The Order of Business shall be as follows:

1. Roll Call.
 2. Reading Minutes of Previous Meeting.
 3. Communications.
 4. Reports of Officers.
 5. Report of Committees.
 6. Unfinished Business.
 7. New Business.
 8. Election of Officers.
- Parliamentary rules shall follow Roberts Rules of Order.

Gas Fired Warm Air Furnace Installed in Milwaukee Model Home

Servicing of Gas Fired Furnaces Taken Care of Largely by Gas Companies

THE Wisconsin News, Hearst's Milwaukee evening newspaper, is engaged at present in building a model home, in which has been incorporated the most modern equipment obtainable, throughout.

The heating plant is a No. 2 Mueller Gas-Era gas-fired automatic warm air furnace. This fur-

nace dealer who puts sincere selling effort back of the gas furnace when talking to the builder or owner.

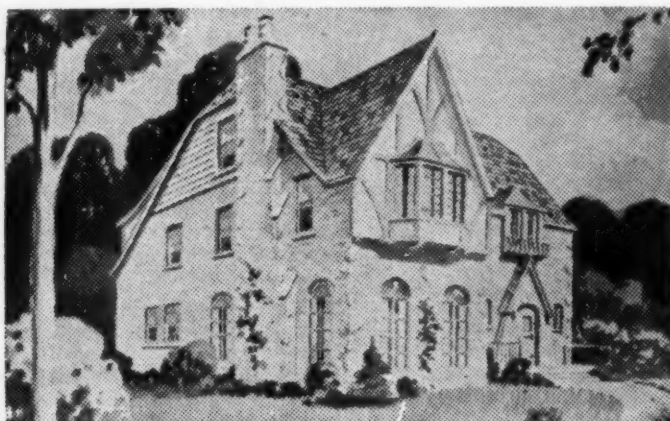
The installation of gas furnaces requires no more skill than is required to properly install the usual type and the correct proportioning of leads and returns is probably

may be necessary from time to time is also taken care of by the gas company, so that it is not necessary for the furnace dealer to have a complete technical understanding of the science of gas heating to make a success of it.

Gas can be burned efficiently only in units designed for gas, and the installation of conversion burners or gas rings in coal furnaces is not recommended. The cost of operation is prohibitive, except with cheap natural gas. The U. S. Bureau of Mines in a pamphlet devoted to the conservation of natural gas, states that conversion jobs use more than twice as much gas as well designed gas furnaces.

While gas heating has been in use extensively on the Pacific Coast and in some natural gas districts for many years, it is actually just beginning to be known and appreciated in other sections of the country. Special house heating gas rates have already been established in most of the larger cities, and within a short time every city and town will enjoy a favorable house heating rate of payment.

Right now is the time for furnace dealers to capitalize on this most modern method of warm air heating. There are many live prospects in every community for truly automatic heating systems and the dealers who are first in the field to take care of this demand, will enjoy a handsome profit for their efforts.



The Model House Erected by a Milwaukee Paper, Equipped with Gas Fired Furnace.

nace has been tested by the American Gas Association.

The rapidly increasing popularity of gas-filled furnaces means a great deal to the wide-awake furnace dealer. The market for gas-fired furnaces for dealers who go out after replacement jobs is increasing, and the bulk of this business is non-competitive. The same holds true on new building business, which holds great profit possibilities for

simpler. The installation cost of gas-fired furnaces is less than with any other type of automatic heat that can be bought.

Gas company co-operation is available for dealers in gas furnaces in most cities. Many gas companies maintain an active sales force, calling on prospects and helping the dealer close the sale whenever possible.

Any servicing or adjusting which

Greater Chicago Warm Air Holds Monthly Meeting

A meeting of the Greater Chicago Warm Air Heating Association was held in the Sherman House Monday evening, April 23. George Harms, Peoria, and E. C. Taylor, Dowagiac, were guests at the meeting.

George Harms commended the spirit in which the members were going after their work. He told of the activities of the Peoria local sheet metal contractors' association, outlining the plan of paying each member \$1 for prompt attendance and another \$1 for remaining throughout the meeting. He dwelt briefly upon the activities for the betterment of the industry in which the association is engaged.

E. C. Taylor, also called upon to say a few words, told the dealers that a very effective method of making manufacturers who refused to cooperate in work for the good of the industry was to ignore their products. He urged attendance at all of the meetings of the National Warm Air Heating and Ventilating Association being held at the Stevens Hotel during the week.

Other matters taken up were concerned with representation for the association at the National Warm Air Heating and Ventilating Association and the formation of a publicity committee.

Grand Rapids Heating Engineers Considering Club House

George Steck, special representative of the Central Alloy Steel Corporation of Massillon, Ohio, was the principal speaker at the April dinner meeting of the Grand Rapids Sheet Metal and Heating Engineers. His subject was "Toncan-Copper-Mo-lyb-den-um Iron." His address was very interesting and instructive and was well received.

Ros Strong, manager of the Homer Furnace Company, Coldwater, Michigan, was down for a pep talk. Ros was down most of the time. He was not running true to form. He made a couple fouls, muffed a high fly and struck out

five times at bat, but after the dust of the battle had cleared away the umpire said he did the best he could.

Considerable discussion was had regarding the building of an association club house a few miles from the city and President Dyksterhuis appointed a committee consisting of Dewey Doyle, chairman, John Sweet and Harry Overbeek to look over the locations and consider plans and report at the next meeting.

Detroit Warm Air Heating Contractors' Association Meets

An unusually important and interesting meeting of this association was held at the Imperial hotel on Wednesday evening, April 11. Following the usual dinner a short recess was taken after which the meeting was called to order by President Fuller.

The principal speaker of the evening, Mr. Kyle of the Semet-Solvay company, gave an interesting talk on by-product coke. Before proceeding with his subject, he spent some time in stressing the value of organization work. He stated that he was greatly interested and quite active in association work, especially in the manufacture and distribution of coke. A part of Mr. Kyle's duties is to investigate complaints from fuel users, and during his investigations has found in many cases the trouble was not caused by the coke or the furnaces. It was either faulty chimney construction or improper furnace installation. He suggested that someone get in touch with the Detroit Coal Exchange so that when defective installation is discovered it can be referred to the secretary of the heating association who will recommend a nearby member to make necessary changes. It is obvious that from this connection many desirable alteration jobs would be secured for some member of the association.

Mr. Kyle's talk concerning the manufacture and use of coke was intensely interesting and at its conclusion he was given a rising vote of thanks.

President Fuller gave a report of

his visit with officers and members of the Grand Rapids Association. He said that he was greatly impressed by the confidence and friendliness which seemed to prevail and was surprised at their sincere desire to assist each other in the solution of their problems.

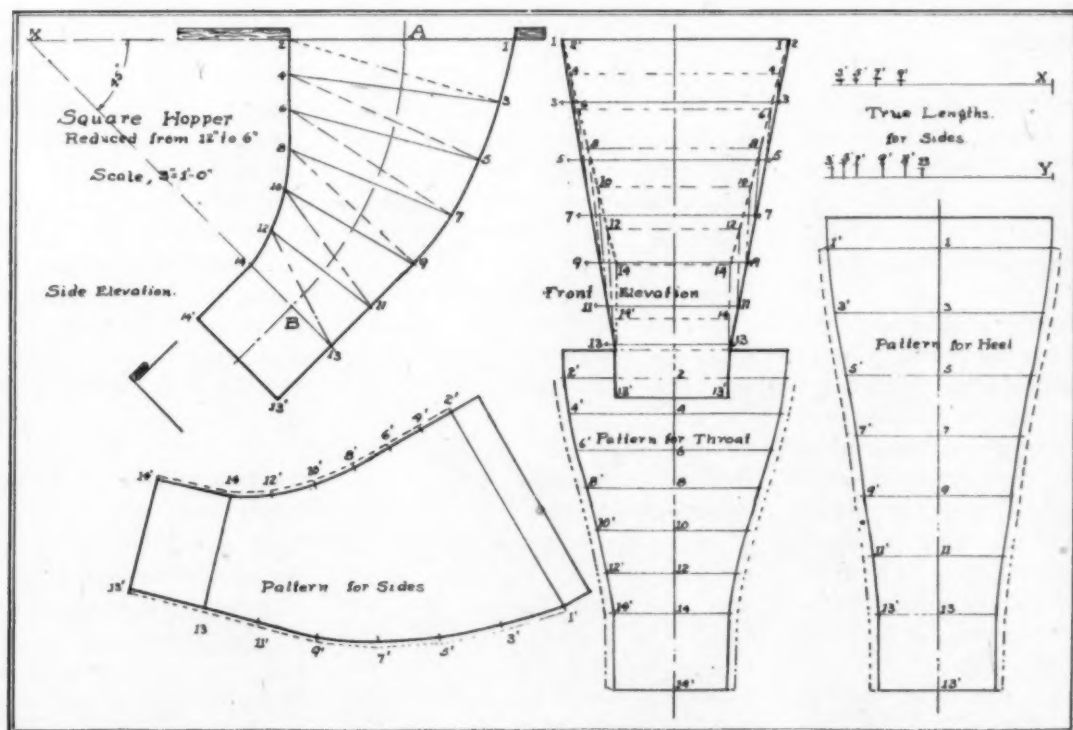
The president outlined the possibilities of an intensified campaign to promote the sale of Certified Heating. To accomplish this he suggests that a commercial secretary be employed and a definite program started. At the conclusion of his talk a general discussion followed and many valuable suggestions were made which resulted in the appointment of a committee to investigate the possibilities of such an arrangement and to formulate a plan which will be submitted to the board of directors and subsequently to the general association for adoption. The committee: W. H. Kratzer, F. R. Beaubien, F. R. Bishop, J. L. Fuller and John DeGraff. State Secretary Ederle was requested to assist the committee.

Warm Air Heating Conference to Be Held at Lansing

Thursday, May 17, will be a red letter day in the warm air heating industry of Michigan, because on that day a conference of heating contractors, manufacturers and distributors will be held at Lansing to discuss several problems which are especially important.

Since the development of the Standard Code by the National Warm Air Heating and Ventilating Association, several methods have been suggested and some tried for the enforcement of the code. Legislation has seemed the most popular method of procedure, many cities having caused the enactment of code ordinances. A number of Michigan members seem to disagree with this policy, others believe it sound. Regardless of the manner in which the goal is reached, a uniform state-wide program would be advantageous. In an effort to arrive at some workable plan the conference is called.

F. E. EDERLE, Secretary.



Pattern for Angled Square Hopper.

Showing Development of Pattern for An Angled Square Hopper

*Details Require Close Attention
and Application for Good Work*

By O. W. KOTHE, Principal St. Louis Technical Institute

SOME time ago Cyril H. A. Markley, Baltimore, sent in a bundle of drawings, which completed his program of study with us, and among them were several of splendid treatment. The trade can see from such work what special application does and the industry put into the work by men of ambition. The condition required that a student's own drawing be made and be described, which is a great aid to expanding one's thoughts, as well as developing a person's ability to put his thoughts down on paper. So the following is Mr. Markley's text for his drawing:

Problem embracing parallel line development.

I have selected a square hopper reduced from 12 inches to 6 inches. Before developing patterns it is necessary to construct a side eleva-

tion, a front elevation and a true length diagram.

Constructing Side Elevation

To construct side elevation, draw horizontal line XI and construct angle $A \times B$ at angle of 45° . Using K as a center and a radius equal to KA, strike Arc AB on X1, lay off the space 1-2 from center A equal to size of inlet of hopper and on line x13 lay off size of outlet. At pleasure, draw the smooth curves 2-14 and 1-13 and divide each into the same number of equal parts. Number the points of division in throat from 2 to 14 by twos and on heel number the points 1, 3, 5, etc., to 13. Draw dotted lines from 2 to 3, 4 to 5, 6 to 7, etc., to point 13 and draw solid lines from 3 to 4, 5 to 6 until line 13-14 is drawn. Draw the lines 14-14' and 13-13' perpen-

dicular to 13-14 and draw a straight line from 13' to 14.

To construct the front elevation, erect vertical and project horizontal lines from all points of division in side elevation to cross center line in front elevation. On the lines 1-2, 14-14' and 13-13' thus extended lay off the width of inlet and outlet respectively. Join the points 1-13 and 2-14 with straight solid and dotted lines. The points of intersection between lines 1-13 and 2-14, and horizontal lines projected from points 3, 4, 5, 6, 7, 8, etc., will give the positions of these points 3, 4, 5, 6, etc., in front elevation. On the left-hand side of front elevation draw the dotted triangulation lines 2-3, 4-5, 6-7, etc., and on right-hand side of same elevation draw the solid lines joining 3, 4, 5 and 6, 7 and 8, etc. Drop perpendiculars

from points 14 and 14 until they intersect horizontal line projected from 13'. Number all points of intersection as shown, completing front elevation.

Developing Throat and Heel

Now, we are ready to develop patterns for throat and heel. On the perpendicular center line of front elevation extended to 14' step off the spaces, 14'-14, 14-12, 12-10, 10-8, 8-6, 6-4 and 4-2 of side elevation from point 14' up stretchout line. Number these points on stretchout line like the corresponding points are numbered in side elevation. Through these points on stretchout line draw the horizontal measuring lines which will be perpendicular to stretchout line. Drop perpendiculars from points 2, 4, 6, 8, 10, 12 and 14 of front elevation until they intersect measuring lines of corresponding number in stretchout. Through the points so located draw a smooth curve and add allowances for seaming completing pattern for throat.

The pattern for heel is developed in like manner, except that the length of stretchout is taken from heel of side elevation as 1-13'. The lengths of measuring lines must be stepped off of front elevation with dividers and placed on correspondingly numbered lines of pattern. This plan is necessary because there is not enough space under front elevation to develop clearly pattern for heel. The other steps are identical to those explained for throat.

Obtaining Side Elevation

Before developing pattern for sides the diagram of true lengths must be constructed. It will be necessary to find the true lengths of lines, 2-3, 3-4, 4-5, 5-6, etc., in side elevation. We will find the amount of off-set of these lines from front elevation in the following manner. On the left-hand side of front elevation drop perpendiculars from points 2, 4, 6, 8, 10 and 12 to intersect horizontal lines extended from points 3, 5, 7, 9, 11 and 13.

The spaces between these points and 1-13 give off-set of dotted lines 2-3, 4-5, 6-7, etc. On the right-

hand side of same elevation from points 4, 6, 8 and 10 drop perpendiculars to same lines 3-3, 5-5, 7-7 and 9-9. The spaces between these points and 1-13 give off-set of solid lines 3-4, 5-6, etc. Now, draw the horizontal lines x-3' and Y-3'. From X and Y step off the lengths of solid and dotted triangulation lines respectively in side elevation.

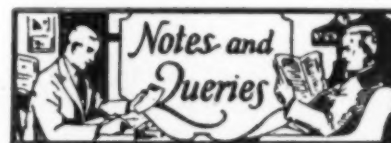
At each of the points just located erect perpendiculars. On each of these perpendiculars step off the off-set found in front elevation. The distances from the points on perpendiculars to X or Y, as the case may be, will give the true lengths of lines required. For example, take length of dotted line 2-3 from side elevation and step that length off from Y on Y3' to case of perpendicular at 3' on perpendicular 3' step off space from 3 to 1-13 on line 3-3 of front elevation. The length of line from this point 3' to Y will be the true length of dotted line 2-3 of side elevation.

To develop pattern for sides draw the line 1'-2' equal in length to 1-2 of side elevation. With 2' as a center and Y-3' as a radius describe an arc in the general location of 3' of pattern and with dividers set to a dimensions equal to 1'-3' of heel pattern and 1' of pattern as a center describe an arc cutting one 1'-3'. at 3'. With this new point 3' as a center and a radius equal to 3'x of true lengths, strike an arc in the general location of the point 4' and with 2' as a center and a radius equal to space 2'-4' of heel pattern strike arc intersecting arc drawn from 3' at point 4'. Continue this method of procedure until points 13 and 14 are reached. Add straight section 14-14'; 14-13'; 13'-13 and allowances for seaming. To finish all pattern as shown it is necessary to add allowance for flange at inlet. Often corners are soldered in this flange of extra pieces of metal.

A. W. Glessner
Re-elected President
Excelsior Steel Furnace

The board of directors of the Excelsior Steel Furnace Company,

Chicago, held a special meeting on April 21 resulting in the election of the following officers: President, A. W. Glessner; vice-president, C. E. Glessner; secretary-treasurer, Herbert C. Glessner. These men also constitute the board of directors of the company.



Designs for Outdoor Lanterns

From L. J. Dockery, 3724 Easton Avenue, St. Louis, Missouri.

Where can I get designs for outdoor lanterns used at doors of residences and other buildings?

Ans.—From Henry Deichman, 1927 Melrose Avenue, Chicago, Illinois.

Plans for Steel Row Boats

From Shepherd Sheet Metal Company, 311 North Spruce Street, Abilene, Kansas.

Where could I get plans for building steel row boats?

Ans.—H. F. Thompson Boat and Pattern Works, Decorah, Iowa.

Molds or Forms for Concrete Flower Pots and Urns

From Lindquist Oil Company, Fergus Falls, Minnesota.

Kindly advise us who manufactures molds or forms for making ornamental concrete products such as flower pots or urns.

Ans.—Consolidated Concrete Machinery Company, Ideal Division, Adrian, Michigan, and Concrete Equipment Company, Holland, Michigan.

Address of Company Making Phoenix Stoves

From Stove Dealers Supply Company, 310 Chestnut Street, Milwaukee, Wisconsin.

Kindly give us address of company making Phoenix stoves.

Ans.—Galusha Stove Company, Norman Park, Rochester, New York.

Star Soldering Pot

From National Sheet Metal Works, 637 LaPorte Avenue, South Bend, Indiana.

Where could I get a Star soldering pot?

Ans.—Burgess Soldering Furnace Company, Columbus, Ohio.

PRACTICAL ETHICS OR RELATIONS BETWEEN GENERAL AND SUB-CONTRACTORS

By OSCAR A. REUM*

FOR a number of years, and especially since the World War, it has been apparent to many that such relations, especially in the ethical field of contracting, have been disturbed and that we are drifting apart from that common understanding which is so necessary, if the even tenor of our way is to be pursued successfully by all.

Forty years of active work in specialized contracting with diligent participation in association work during this long period of time, has left lasting impressions upon me of such relations.

Those which seemed unfavorable to one viewpoint or the other of the subject under discussion can best be dispelled by calm consideration in such a meeting as this, where honest understanding should be promoted for the good of all.

The presentation of such a subject as this is no easy task, as the problem concerns a greatly changed condition in the contracting industry. This is due to the fact that speculative building and speculative builders in all of its ramifications has become a part of the general contract system.

With this has come the "straw boss" type of sub-contractors, so that of necessity ethical contracting must face a situation entirely unlike that of former years.

There has come with such transformed conditions ruthless, unfair and unending competition, which is one of the most potent factors in making the discussion of the relations between general and sub-contractors necessary. Such competition intensified is one of the outgrowths of the general contract system as it is at present constituted.

Carried to the extreme towards which it is rapidly tending, it can only result in the complete sacrifice

of the fundamentals of good construction, with discredit and loss to the industry as a whole.

In seeking a remedy for the present-day ills, might it not be well to give some consideration to the practical ethics of the past? Modern type construction made the advent of the general contract system possible. In the earlier days, higher ideals in the relationship of the units and of construction itself was prevalent.

The right of the general contractor to adequate compensation for the supervision over and assumption of sub-trades was recognized by all. Compensation of ten per cent added to the face of legitimate non-discontinued sub-contract bids was the usual custom. Contracts were awarded such specialized contractors without peddling or discount. The result was *Quality* work and satisfied owners.

It is largely due to the fairness that obtained in those days that the general contract system became easily established. Mutual respect and efficiency joined with responsibility, will always command good will and co-operation and result in better buildings and high regard for us in and out of the industry.

The *Quality* workmanship and stability of buildings erected under such conditions has been demonstrated by the test of time and is the best evidence of the soundness of the reasonable limitation of the competition of such earlier days.

As the modern type of building became more and more the vogue, the old-line contractor, both general and specialized, abandoned in a large measure the home-building field, and then there came into this sphere of action the speculative builder.

It has been but a short step from house-building to skyscraper type of construction, with the speculative builder dominating such construc-

tion in no small measure, and construction and contracting, as a result, has become involved in the endless complications of high finance, make-shift construction and remote or intangible ownership.

In this evolution legitimate contractors, general and sub, as well as intrinsic ownership, finds itself far removed from first principles. The restraining and stabilizing influence of the supervising architect has been eliminated from much of such building, and we now have country-wide slogans for Better This and Better That to go into Better Buildings.

Is it not possible that responsible contracting has yielded too far to the superficial and the transient now so dominant in the construction field?

These and other conditions call for even-tempered action taken in a spirit of mutual co-operation by general and sub-contractors alike. This will be found no easy task. If association contractors alone were concerned, then it might not be so difficult; but unfortunately, however, they only represent a minority, if we are to consider the speculative field.

In the earlier days the general contractor was what the name implied. Usually he undertook with his own men such basic trades as were necessary to enclose a building. He had an intimate knowledge of the capabilities and acquaintance with every contractor whose bid he accepted. Costs contemplated under general conditions were estimated in the same way as the brick work or any other part of a building, and the cost passed on to the owner, as should be. The proposition of assessing ambiguous items of expense far removed from specialized detail specifications and as much pro rata of general conditions as possible, was unheard of.

Under present-day conditions there are many calling themselves general contractors who do not em-

*Reprinted from *The Plastering Craft*.

ploy men or use material for any part of a building for which they have a contract. Their activities are confined to circularizing the country for sub-bids and letting cut-throat contracts to unfortunate or gullible sub-contractors, and splitting the component parts of important sub-contracts into as many subdivisions as a book on fractions and collecting indemnities from the subs in the form of pro rata and general conditions.

This class of so-called general contractors seems to be increasing, and sub-contractors are to blame for the evils of such general contracting. Their eagerness for the immediate job makes such contracting possible.

No general contractor who assumes the responsibility for the actual construction of a large part of the work with his own men can stand up against such competition.

Specialized contractors operating in only one branch of the trade must of necessity make either a profit or a loss from such trade. Any mistake in estimating or unforeseen condition in executing a contract leads to loss. Specialized trades usually call for the highest skilled and best paid labor to do such work. It calls for technical knowledge upon the part of such contractor if successful result is to be obtained. If the use of specialized so-called sub-contractors was not the most satisfactory from the standpoint of economy and lessened liability, the general contract system would long since have endeavored to absorb most, if not all, of such sub-trades.

However, in the great changes the entire contract system is undergoing it will be well for us to take needful steps to reconcile differences between the units themselves, so that contracting can be placed upon the highest plane and its trend towards speculation and inferior construction ended.

Let us briefly consider some of the existing conditions: Central associations, especially in the larger cities, are usually headed up by general contractors, and are, in fact, largely dominated by their influence.

It is and has been the policy of such controlling influence to centralize control over labor agreements, the theory being that such centralized agreements offer the most effective means of securing wage scale and other conditions necessary for the welfare of the industry.

The division of employer units always results in loss and non-observance of such agreements. It is, however, the practically universal feeling among specialized contractors that the making and holding of independent trade agreements is one of the most important factors of independence, and that a surrender of their right to make agreements with the men they employ would place them finally in a position of subserviency.

There is a feeling that the growing tendency upon the part of the general contract system to secure for itself cost-plus contracts, with unlimited competition imposed upon sub-contractors, is an effort to avoid contractual liability for itself which it is willing to pass on without limit to sub-contractors. It is felt that increasing use of guaranteed cost, plus fixed fee, through devious forms of contract and now taken at such low price levels, in many instances, is practically at the expense of sub-contractors because of the excessive competition imposed upon them in order to meet guarantees and often in order to participate in so-called savings.

Such tendency constantly results in sub-contractors of responsibility and standing being placed in competition with those in no ways comparable. This leads to bid peddling, which makes for a continuously demoralized market, which in the last analysis is unprofitable to the general contractor himself. There has come with the expansion of the general contract system and the advent of the speculative builder the question of the payment to sub-contractors for work performed, and this is growing most serious, as upon the sub-contractor falls in large measure the financing of such work.

Too often the sub-contractor finds his lien and other rights have been

given away by his principal. I will not dwell upon the one-sided form of contract too often handed out to sub-contractors by many. It is sufficient to say that many are so devoid of equity as to be unenforceable in any court of equity.

It is possible that the willingness of general and sub-contractors alike to quote and price to whom it may or may not concern, thousands of unit items, making up the cost or less, of any contract, prospective or otherwise—in fact, has become a correspondence course in contracting—is responsible in no small measure for some of the irresponsible competition complained of.

In no other industry that we know of is there such a multitude of segregated items of cost broadcast. The continuing enlargement of unit items called for to be used in every conceivable place seems to be a lack of confidence of those in our industry.

Let us try to see this picture from the other viewpoint, namely, that of those in the general contract system (who are not agreed that all ills complained of are due to general contracting alone).

That the sub-contractor, by failing to co-operate in full measure, helps to create many of the conditions complained of;

That a double competition is created where sub-contractors compete for separate contracts in cases where general bids are asked for;

That certain trades refuse to give bids to general contractors, although finally such contracts are placed with the general contractor although the direct bidding is with others;

That other trades, through codes or rules made with or without sanction of unions, impose arbitrary and unfair conditions around any contract accepted by them from general contractors.

The evils complained of on both sides and the remedy for their correction and cure will not be found until the responsible, the ethical and the legitimate contractor, both general and specialized, join hands in sincere efforts to arrive at a common understanding.

Oxy-Acetylene Welding of Steel Pipe Produces Strong Joints

Type of Weld Will Be Determined by Tensile Strength Required

By S. W. MILLER

IT will probably be well to refer briefly to the general subject of steel welding before considering its application to steel pipe. The usual grades of soft steel are composed of iron containing a small amount of carbon. There are, of course, other elements in it, but they are small in amount and have practically no effect on its strength or other physical properties. The maximum amount of carbon in such steels is about one-fourth of 1 per cent, and this is only reached in the stronger forms of such materials as boiler plate, which has a tensile strength of about 60,000 pounds per square inch of section—that is, it would take 60,000 pounds to pull apart a piece 1-inch square.

Materials containing less carbon have less strength, so that when only about one-tenth of 1 per cent of carbon is present, which is about the amount in pipe, it has a strength of between 45,000 and 50,000 pounds.

Oxy-acetylene welding or gas welding, as it is commonly called, is done by melting together the pieces to be joined, and adding extra metal from a welding rod if necessary to fill up the joint. The material added from the rod is melted off its end into a little puddle or pool formed by melting the pieces to be joined. Evidently this process results in a thorough and complete union of the pieces, so that the joint is solid, both within itself and with the pieces to be joined. If this thorough fusion is not obtained, the joint is weak, a real weld not having been produced.

If the material to be welded is not too thick, it is quite easy to melt entirely through it. The limit of thickness which can be so welded is about 3/16 inch. When the thickness is greater, it is necessary to

bevel the edges of the pieces so that when placed together they form a groove which, on account of its shape, is usually called a "V."

When the material is not too thick, or when the load to be sustained is not too great, the "V" can extend from one side of the plate to the other, but great thicknesses or heavy strains require that the plate be beveled from both sides, making what is called a "double V." One side of this "V" is first welded; then the piece is turned over, and the other side of the "V" is welded. Material 1/2 inch thick or more should be welded from both sides—that is, with a double "V," if full strength is expected.

The usual angle of the "V" is 90 degrees for steel, for both single and double "V" types.

For much work an ordinary welding rod containing but little carbon, and hence of comparatively low strength, is good enough. It will give in the weld about 45,000 pounds tensile strength per square inch. Of course, such a rod is specially made for welding purposes, and common wire, of whatever type it may be, is not at all suitable for welding. However, where high strength is necessary, there are special rods on the market that will give over 60,000 pounds tensile strength and that will make sounder and cleaner welds than the ordinary wire. They also enable the welder to get better fusion at the bottom of the "V," which is the hardest place to get welded, and even if there is some imperfection in the weld, the higher strength obtained by these rods gives a greater margin of safety than does the ordinary material.

Wrought pipe may be of either wrought iron or steel, and either one is suitable for welding. The

strength is roughly the same, that of wrought iron being about 45,000 pounds, and that of steel being 50,000 pounds per square inch.

When pipe or any other cylindrical structure is subjected to internal pressure, such as that of steam or water, it will split lengthwise before it will pull apart, because the stress in the former case is twice what it is in the latter, so that it is evident that there is no danger, with a properly made weld in pipe, of any break occurring at the gas welded joint.

The bursting strength of standard weight pipe is very high, ranging from about 8,000 pounds for 1-inch pipe to about 5,200 pounds for 4-inch pipe. Extra strong 1-inch pipe requires an internal pressure of about 11,000 pounds to burst it, and 4-inch extra strong requires about 7,500 pounds. Of course, the bursting would be by splitting the pipe lengthwise, and it would take twice as much pressure to pull apart the pipe endwise.

There are several advantages with welding that cannot be obtained with other forms of joints.

1st. A properly made weld is absolutely tight.

2nd. It is as strong as the pipe itself.

3rd. It can usually be made more quickly than other types of joints.

4th. By the use of cutting and welding blowpipes, awkward connections can be made much more easily than when fittings have to be used.

It should also be understood that gas welding can be done in any position on top of a flat surface, a vertical weld in vertical plate, a horizontal weld in vertical plates, or overhead, and of course if welding can be done in plates it can be done in pipe in the same position.

Most of the welding in ordinary steam installations is done in pipe not exceeding 4 inches in diameter, but this does not mean that larger pipe cannot be welded. So for our present purpose we will only consider pipe up to 4 inches in diameter. Four-inch standard weight pipe is practically $\frac{1}{4}$ inch thick, while 1-inch pipe is about $\frac{1}{8}$ inch thick, and 2½-inch pipe a little over 3/16 inch thick. With a little care 3-inch pipe can be welded without beveling, but 4-inch pipe should really be beveled to be sure of a first-class weld. Unbeveled pipe should always be set some distance apart, say, $\frac{1}{8}$ inch, so that the inside edge of the pipe can be thoroughly fused, and so that the shrinkage of the metal as the weld progresses will not close the opening.

Beveling the pipe can be done by a special tool in a pipe cutting machine or with a cutting blowpipe, although the cutting scale should be thoroughly removed with a file, hammer and chisel, or by grinding before welding if the best results are expected. It is not good to get the cutting scale mixed up with the melted metal, because it makes laps or imperfect union in the weld, which is therefore not as strong as it should be.

There is one other point that might be spoken of. A 1-inch standard pipe should screw into the fitting by hand about $\frac{3}{8}$ inch, and a 4-inch pipe about 11/16 inch. The thickness of 1-inch pipe at the end of the fitting at the bottom of the thread is somewhat over .07 inch, while the thickness of the pipe itself is somewhat over .13 inch, or nearly twice as much. With 4-inch pipe the thickness at the bottom of the thread at the end of the fitting is about .09 inch, while the pipe thickness itself is about .24 inch. In other words, only about three-eighths to one-half of the pipe thickness is left at the end of the fitting, and the joint is very much weaker than the pipe.

By welding the pipe it is frequently possible to use standard weight pipe instead of extra strong,

which of course decreases the cost of the job and often makes important savings in weight.

I think that the advantages of welding in the case of pipe are well worth considering, especially when it is possible to teach a man of average intelligence how to weld successfully in a comparatively short time in all ordinary work. Of course, success in horizontal, vertical and overhead welding can only be obtained after practice, but practice is necessary to accomplish anything that is worth while.

Council Meeting of A. S. of H. & V. Engineers Held in Chicago

Five members of the American Society of Heating and Ventilating Engineers' Council attended a meeting at the Union League Club, Chicago, recently. President A. C. Willard opened the meeting and the following members responded: Roswell Farnham, Buffalo; John Howatt, Chicago; H. Lee Moore, Pittsburgh, and F. B. Rowley, Minneapolis. Samuel R. Lewis, Chairman of the Committee on Research, and F. C. Houghton, Director of Research Laboratory, were present by invitation.

The dates of future Council meetings were approved as follows: Buffalo in May, West Baden, Ind., June, Pittsburgh, September, and New York in December.

The program for the Semi-Annual Meeting was presented by Professor Rowley and some fine technical sessions are in prospect for members who come to West Baden, June 26 to 29, 1928.

C. R. Ammerman of Indianapolis was unanimously chosen Chairman of the Committee on Arrangements and the entertainment and social events will be handled under the direction of his committee.

The Council decided that the Annual Meeting of the Society 1929 would be held in Chicago, January 28 to 31, and then decided that Cleveland would be the site of the Semi-Annual Meeting in June, 1929.

President Willard appointed J. F. McIntire of Detroit, Chairman on

Increase of Membership, and this selection was unanimously approved by the members present.

The Constitution and By-Laws of the newly organized Pacific Northwest Chapter, Seattle, were approved and a committee composed of Messrs. Driscoll, Gant and Still was selected to draft new regulations covering membership in the Society so that needed amendments might be made to the Society's Constitution and By-Laws.

Detroit Sheet Metal and Roofing Contractors' Association

The successes of this organization have been many, the accomplishments have been so frequent that they are becoming commonplace, but great as they have been no single achievement can compare to the first ladies' night which was held on Wednesday night, April 11, at the Book-Cadillac hotel. The committee in charge of this event, Wm. Amelung, Al Berschbach, Jr., and Tom Dantz, certainly left nothing undone to make the evening one long to be remembered. A seven-course dinner with dancing and entertainment between courses preceded the introduction of Wm. Amelung as toastmaster. Bill proved himself a wonderful master of ceremonies.

Bill Busch was first called upon and in his usual good natured way made everybody feel at home. The principal talk of the evening was given by Lou Flint, secretary of the citizens' committee, and, of course, was greatly appreciated. Following this dancing was enjoyed until a late hour. Mr. and Mrs. Homer Brundage of Kalamazoo were out-of-town guests. Mrs. Al Berschbach, Sr., can be given full credit for having made this event possible. Ever since the summer outing at the flats, Mrs. Berschbach has been insisting on something of this kind and there seemed no way to keep her quiet except to comply with her request. You are all right, Mrs. Berschbach, and we think everyone agrees that this should be an annual event.

St. Louis Delegation to Cleveland to Go Via Nickel Plate Road

The St. Louis Association of Sheet Metal Contractors, through their transportation committee, have selected the Nickel Plate railroad for their means of transportation to the Cleveland convention of the National Association of Sheet Metal Contractors, May 22 to 26.

They will leave the Union Station, St. Louis, over the Nickel Plate road Sunday evening, May 20, at 5:15, and everyone to whom this road will be convenient is invited to join the party.

In order that arrangements can be made by the committee, all intending to take advantage of this generous invitation should communicate with Ben Kolbenschlag, 3616 North Grand boulevard, St. Louis, who is chairman of the committee on transportation.

The railroad ticket should read via Nickel Plate road from St. Louis to Cleveland, Ohio. The passenger should also ask for a certificate which entitles him to half fare for the return trip.

Air Pockets the Real Cause of Explosions In Garages

E. K. Campbell, Campbell Heating Company, Kansas City, Missouri, brought up the matter of the proposed Code for Heating and Ventilating Garages at the recent meeting of the American Society of Heating and Ventilating Engineers, intimating that a brief survey of the history of this matter may make it clearer to some of the members who are not familiar with it.

"The insurance interests became concerned as to the danger of fires in the big garages, so they requested the National Fire Protection Association to formulate a code covering the construction and the heating and ventilating of garages.

"This association in turn formed a committee and asked representatives from different engineering or-

ganizations to serve on that committee.

"Before going further with the report I want to say a word about the National Fire Protection Association. It is an organization composed of about 150 different societies. A great many of them are engineering societies. They have before them for consideration now not only the ventilation of garages, but the ventilation of spray booths and a lot of kindred problems. The chairman of the Committee on Garages this morning in a conference invited this society to become a member of the National Fire Protection Association, and gave as his reason for the invitation that he wanted to have the services of this society in solving various ventilating problems. I want to recommend on behalf of our committee to the council that they consider this matter and take the necessary steps immediately to become members of the National Fire Protection Association.

"The code as originally prepared and submitted in tentative form was subjected to some considerable protest at the June, 1927, meeting, with the result that a special committee was appointed to work with Mr. Walther and give the matter further consideration. This committee, of which I am a member, approached the matter in a little different attitude than had been used by the insurance people in the preparation of the tentative code. They undertook to prevent recirculation, by inference preventing the use of warm air furnaces, thus dealing a blow to a very considerable section of the heating and ventilating industry. This committee has taken the ground that no section of the industry should be discriminated against; that necessary safeguards should be provided so that the system would be safe in actual operation and, of course, those safeguards must be approved by the National Fire Protection Association.

"We have also brought out the point that air movement is one of the most essential things to safety, on the ground that it is absurd to

imagine that enough gasoline evaporated into the air of a garage of any size could make all the air of that garage explosive. In one garage that I figured it would take 14 barrels of gasoline evaporated into the air all at one time to make it dangerous. So we took the position that the danger lay in the formation of pockets of explosive gas and that the only way to avoid that danger was to break up those pockets by air movement.

"A very good illustration of that fact came just recently. There was a fire here in New York City where a million dollars' worth of new cars were burned. It started by a mechanic dropping a chisel on the floor. The spark set fire to a little pocket of gas from some gasoline that had leaked out of a leaky carburetor. That explosion jumped to the vent hole in the cap of the tank of a nearby car which had just come in, was cold, so that the mixture inside of the tank was explosive. There was immediately a second explosion. That blew gasoline all over and a series of other explosions followed. One man lost his life and nearly a million dollars' worth of cars were destroyed as the result of dropping that chisel into a pocket.

"So that, as our committee views the problem, the danger lies in the gas pockets. Any prevention must lie in breaking up the pockets.

"We just had a conference with Mr. Newell, the chairman of the Garage Committee of the National Fire Protection Association, and have arranged for a further conference in Chicago some time in February at which the Underwriters' Laboratories will be brought into the matter and we hope at that time to be able to reach a successful conclusion.

"At this time we are not ready to report a code, although many features of the code have already been agreed upon. Some of the things that we consider vital and that the other members of Mr. Newell's committee consider vital, have yet to be fully agreed upon before a final report can be made."

Random Notes and Sketches

By Sidney Arnold

"The essence of humor is sensibility; warm, tender fellow-feeling with all forms of existence."—Carlyle.

At last! the long heralded and eagerly awaited golf match between Les Taylor and Jack Stowell, the challengers, and Arthur Lamneck and H. T. (Tommy) Richardson, acceptors of the challenge, has been played, resulting in complete and decisive victory by Les and Jack. The match took place at the Pickwick Suburban Course near Glenview, Illinois, April 26th, and the victors were duly rewarded.

For the benefit of any of my readers who may not know what this is all about, let me elucidate by saying that one day last year Jack Stowell, furnace installer and sheet metal contractor at Aurora, Illinois, and Les Taylor, vice-president, International Heater Company, Utica, New York, found themselves together and in a very expansive mood (I think they had been playing accordions, and like Napoleon, Alexander the Great, Mussolini and Gene Tunney, they sought more worlds to conquer. Thereupon they began casting about for a means of giving harmless expression to their combative spirits. They offered a challenge to play golf with any two men in the warm air heating industry, little thinking that anyone would be so bold as to take them at their word.

However, Les and Jack were to be made to "strut their stuff." Arthur Lamneck, secretary of the W. E. Lamneck Company, Columbus, Ohio, the modern Cicero of the warm air heating industry, expounder of legal heating dogma and "status quo" tenets, decided that matters had been in the status quo long enough. He would teach these two "birds," who were pluming their feathers, that his golf sticks were as strong as theirs. (On the Q. T., he actually broke one driver on the tee off about the fourth tee of the first nine, so grim was his determination to win.) He accepted

their challenge with alacrity and with no trepidation.

But what to do? He couldn't play them alone. The challenge specified, "any two men in the warm air heating industry," although he would gladly have taken them on alone and have given them a handicap to boot, feeling certain that any



Above—The Victors, Jack Stowell and Les Taylor Holding the Trophy. Below—The Vanquished, Art Lamneck and Tommy Richardson.

difficulty he got into his "drag" in the legislative halls of the nation would help him out. He thought a moment. Tommy Richardson flashed into his mind. "Jovial, rotund Tommy," (secretary, Richardson & Boynton Company, New York), mused Art. "Could he see the golf ball at his feet, though?" Art pressed a buzzer at his desk and a moment later had dictated a wire to Tommy. Within an hour the replay came back: "Can stomach anything. We'll make them eat every ounce of turf they dig up; they're going to think they're moles when we get through with them."

But getting together was more difficult than had been anticipated. Jack was busy pumping hot air into the public at Aurora, the City of Lights. Les had taken on new responsibilities and dignities since the rash challenge had been made. Art was losing sleep over the fact that his new clothes dryers tore buttons from pajamas and that universal male accessory, the B. V. D., while Tommy back in New York was feverishly trying to tone down the blue (from his cussing) on his new furnace. It was not until the National Warm Air Heating Association convention in Chicago gave them their opportunity that the four principals, armed with golf clubs and knickers—and, but that's another story—were able to bring the great event to pass. Out they went in full golf regalia to the Pickwick Suburban Golf Course near Glen View, Illinois, each confident that he could tee-tattle, out dri(nk)ve, out put, out (niblic) nibble, and out trap the opponent. And the game began.

Jack had a tremendous driving power, but for reasons unknown he succeeded more frequently than desirable in putting just enough of a hook on the ball to land it in the traps. Tommy had a peculiar way of holding his clubs, grasping the ball-punishing iron just above the center and letting go a drive that put the little white pill far down (and often off) the fairway. He missed on first two shots, however. Les had a blood curdling way of

sneaking up on his victim and saying something about "papa's going to give you a fast ride now," socking the pill, then standing back triumphantly to watch it soar straight for the far away green, give a slight twist and "plunk" down, not in the trap, but on the side of the trap hill (such beautiful practice getting out). Art, on the other hand, had a tremendous driving force and an aim as deadly as a Chicago bootlegger, but his putting was off. His difficulties didn't begin in real earnest until he got on the green, and there he either went to pieces (he had been working, oh, so hard lately!) or had tough breaks. And so the game went merrily on for 18 holes, the first 9 giving Tommy and Art scores of 44 and 46, respectively, while Les and Jack came in with 40 and 42, respectively, for the first 9 holes.

In the second 9 all four men made the first hole in one over par. Jack made the second hole in one over par, but the others had two each over. On the third hole Jack did it in one under, Art, Les and Tommy going it in par. At the fourth Jack and Art fell down, requiring two each over par, Les and Tommy taking one apiece over par. And so on to the end. Jack came in on the last 9 with a score of 42, Les had 44, Tommy had 44 and Art 42.

Thinking it the only courteous thing to do, after the men had worked so hard, I presented the victors with a bronze loving cup, suitably engraved. Then the fight ensued as to who of the victors was to take it home. They matched wits for it. Jack took possession of the trophy and will place it on display in his shop window.

As for the vanquished, neither Art nor Tommy showed the least sign of perturbation, and I believe they would readily have accepted a second challenge had one been offered. So the trophy abides in the hands of these two victors until two other bold and intrepid players think they can wrest it away.

Items That Appeared In the Diary of a Bankrupt Contractor

Up betimes and to the office about 9 o'clock. It was cold and chilly and I just didn't feel like getting up so early. When I reached the office found the outside crews just getting off to work, nearly two hours late.

Mr. Shavem, the general contractor, who is a hard nut to figure with, was waiting. He said that he was able to get that Smith job done \$500 cheaper than I offered to do it, and wanted to know if I would meet the price. I figured that if Jones could do it at that price I could, too, so I agreed.

A solicitor for the Community Chest came in and wanted a subscription, but I turned him down cold, and I wasn't any too nice about it, either. I get tired of these birds coming around. Some of these contractors, who say they want to have a part in community development and civic programs, can turn loose their money for such things if they want to. As for me, I will plug my way alone.

The express truck has just driven up and that confounded manufacturer has sent that shipment C.O.D. I had credit with them and I wonder what is getting wrong with them. If I didn't have to have this stuff I would refuse to take it.

Found a notice of the association meeting tonight, but I threw it away. There isn't anything to be had at such meetings. I haven't paid any dues for the last two years, and I don't see any use bothering with that gang of competitors. They parade themselves under the cloak of improvement of the industry, but I haven't seen any improvement in my business. They claim that everybody should have a part in the work, but what I want is more money in the bank. I've got to have immediate returns on my money. That shows what a good business man I am. So I won't be at the meeting tonight. I'll probably drop by the pool room and spend a pleasant evening with the cue gang.

What! The Sheriff? He's got a bunch of papers. Sure enough, it

was a list of my creditors. Put up or shut up, he said. So I shut up shop. I guess I am bankrupt. I wonder what's wrong?—*Tri-State Association Bulletin.*

Are You Making Use of Information Divulged by Research?

"Law and Labor" says that the National Industrial Conference Board has found that about \$200,000,000 is being spent annually in the United States for industrial research. More than 1,000 business concerns now maintain departments or laboratories. One of these concerns spent over \$5,000,000 in 1926 on its research work. A public utility corporation spent practically \$13,000,000 in the same year. Seventy trade associations spend about \$15,000,000 a year, and 152 colleges and technical schools about \$1,500,000 in research. Industry is spending about two dollars for every one spent by the federal government. Besides these expenditures for technical developments, other large sums are spent by life insurance companies; privately endowed, social, economic and charitable institutions, and state and local governments in the collection and compilation of data of social significance.

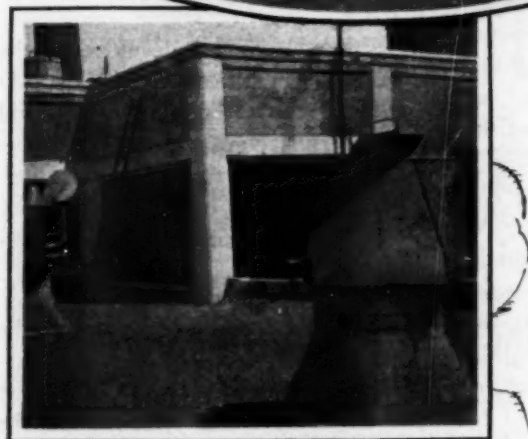
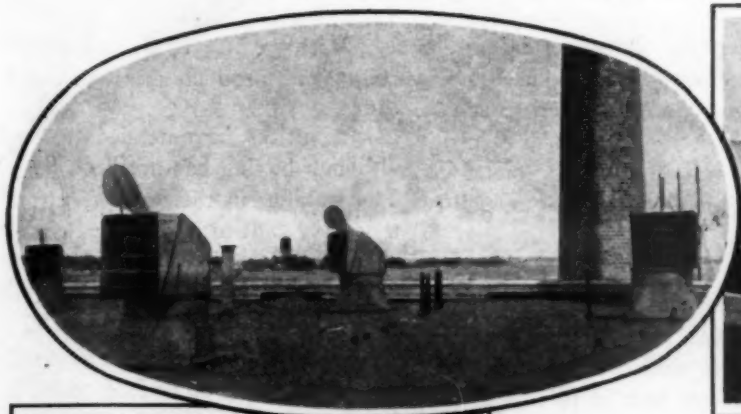
All of these expenditures go toward making labor more valuable, by the discovery of new products for which there is a demand for labor, by the discovery of new tools and materials which increase the efficiency of labor, and by the education of the wage earner himself as a more efficient producer.

Industry, the state and social institutions are contributing their combined effort to raise the price of what the wage earner has to sell.

Year by year the total ranks of those institutions who seek to increase wages by disruptive methods and to hold the employer and the employe apart in order to emphasize class lines are diminishing in number.

Are you making use of this information and making labor more valuable in your own business?

If your ventilator prospects want a durable economical installation tell them



about this service record

TEN years ago a series of ARMCO Ingot Iron ventilators was installed at this Florida Light and Power Company's plant, Miami, Florida.

Then came rust-fire* to the attack . . . borne on the wings of salt breezes. But pure iron resisted the invader—is doing so to this day.

If you live on the seacoast—or if you do any commercial refrigeration work—you know what a menace salt air or water is to sheet metal. And if you use ARMCO Ingot Iron you know how this pure, rust-resisting iron stands up under such conditions.

On the other hand, perhaps your prospects' particular rust-fire problems are bred of smoke, soot, condensation, or certain chemical or alkali exposures. If it is any of these you'll want to recommend "the iron that's made to last."

ARMCO Distributors' Association of America

Executives Offices: Middletown, Ohio



ARMCO
INGOT IRON
RESISTS RUST



Here RUST-FIRE is retarded. The only difference between rusting and burning is time—both are oxidation. You can feel and see the fire produced by rapid burning. But when metal rusts, the process is too slow to see. Rust is the "ash" of this fire.

Mention AMERICAN ARTISAN in your reply—Thank you!

Buying of Finished Steel Is Done Sparingly Which Overshadows Production

Pig Iron Shipments Good—Lack of New Demand for Nonferrous Metals Offset by Large Shipments

CONSUMERS of finished steel continue to buy sparingly, being well protected a short distance ahead or inclined toward conservatism for price or seasonal reasons, and this policy is beginning to cast its shadow over the production end of the industry. Only a wave of buying in the final days of the month could have sustained operations at the high levels that carried over from March, and this has not developed nor is it in prospect.

A checkered situation is in the making, as one result. Pittsburgh district ingot production has slipped from 85 to 80 per cent. Chicago holds at 95 per cent, but the blowing in of a steelworks blast furnace stack there is meaningless because one is being dropped this week.

Finishing mill operations in the Mahoning valley have risen coincident with curtailed ingot output. Buffalo at 85 per cent, is off slightly. Steel corporation subsidiaries are unchanged at 88 to 90 per cent.

Pig Iron

Single carload sales up to 200 tons at a time constitute most of the activity in pig iron at Pittsburgh. Although one concern is reported to have closed for 3,000 to 4,000 tons of basic for its plant at Alliance, O., at \$17, delivered, all valley furnace interests deny taking the tonnage, claiming that as they are on a \$1.13 freight rate, a furnace price of \$15.87 would be uninteresting.

The trade here understands the order went to a furnace outside the valley having a much lower freight rate, indicating a basic market of \$16, valley. One producer sold three small lots of malleable at \$17.25, valley.

Several makers are selling small amounts of No. 2 plain on the same basis, higher silicons usually commanding 50-cent differentials. Gray forge iron, usually available at 50

cents under No. 2, cannot be purchased now below \$17, and a higher price applied on the last tonnage sold to a pipemaker, the \$16.75 figure previously reported proving erroneous. Small lots of bessemer are selling at \$17. Basic still is quoted \$17, valley.

At Chicago buying of spot pig iron for second quarter fill-in continues active, with indications of an increase in the melt in this district. Concerns serving the automotive industry are taking steady shipments. Several additional tonnages have been closed for a part or all of third quarter.

The possibility is seen that April shipments may exceed March. The price of \$18.50, base, Chicago furnace, is steady for both spot and future shipments. A cargo of boat iron is due here from an eastern lake furnace early next week, but it is believed the aggregate sales of boat iron thus far has been light. St. Louis district iron is being sold by local sellers in central Illinois on the basis of \$18.50, Chicago. Concessions of 50 cents a ton are reported in several silvery iron sales in this district.

Deliveries on pig iron contracts are steady, and more foundry iron is moving than is being made. The policy of buying only for immediate needs is maintained, even by melters who have many orders for their products. The price is firm at \$16, base, Birmingham. Two blast furnaces in this district are being repaired.

Copper

Some copper has been available under 14.25 cents, Connecticut, the past week. The amount was small, however, and practically all producers have held firmly to 14.25 cents. Sales were made at this level. Some export business has been done at

14.50 cents c.i.f. Brass and copper rolling mill products are unchanged.

Zinc

Zinc prices have tended upward although buying has not been large. The stability in the ore market and a steady advance in the market abroad primarily are the strengthening factors. Some prime western metal has sold as high as 5.82½ cents, East St. Louis, and today sellers were asking up to 5.85 cents.

Lead

Little change has developed in the lead market. Prices have held steady at 6.00 cents, East St. Louis, and 6.10 cents, New York. Trading is confined to small lots but as little metal has been bought for delivery beyond May buying of size is expected to develop soon.

Tin

Some business was done in tin the past week but the total tonnage purchased was not large. The market today is more than ½-cent under the price ruling at this time a week ago. This decline is accounted for by the fact that early last week prices went up rapidly with fair sized buying and then fell as demand was satisfied.

Solder

Chicago warehouse prices on solder are as follows: Warranted 50-50, \$33.00; Commercial 45-55, \$30.00; plumbers', \$27.00; all per 100 pounds.

Old Metals

Wholesale quotations in the Chicago district, which should be considered as nominal, are as follows: Old steel axles, \$15.50 to \$16.00; old iron axles, \$21.50 to \$22.00; steel springs, \$15.50 to \$16.00. 1 wrought iron, \$11.00 to \$11.50; No. 1 cast, \$12.50 to \$13.00, all per net tons. Prices for non-ferrous metals are quoted as follows per pound: Light copper, 9 cents; zinc, 3½ cents; cast aluminum, 13¾ cents.



Prest-O-Weld doesn't pay interest— it pays principal

YOU hear a lot of people talking about interest on an investment.

A Prest-O-Weld outfit for oxy-acetylene welding and cutting doesn't pay interest. It pays principal. It pays back your expenditure and then keeps right on making a profit for you.

Prest-O-Weld is a good buy because it is reasonably priced and because it is well made (by the makers of the famous Oxweld blowpipes).

Sold by jobbers everywhere.

OXWELD ACETYLENE COMPANY
Unit of Union Carbide and Carbon Corporation



CHICAGO
3642 Jasper Place

NEW YORK CITY
30 East 42d Street

SAN FRANCISCO
1050 Mission Street

PREST-O-WELD

Say you saw it in *AMERICAN ARTISAN*—Thank you!

Chicago Warehouse Metal and Furnace Supply Prices

'AMERICAN ARTISAN' is the only publication containing Western Metal, Furnace Supply and Hardware prices corrected weekly

METALS

PIG IRON

Chicago Fdy., No. 2	\$18 50
Southern Fdy. No. 2	22 01
Lake Superior Charcoal	27 04
Malleable	18 50

FIRST QUALITY BRIGHT TIN PLATES

IC 20x28 112 sheets	\$25 10
IX 20x28	29 40
IXX 20x28 56 sheets	16 20
IXXX 20x28	17 55
IXXXX 20x28	18 95

TERNE PLATES

IC 20x28, 40-lb. 112 sheets	\$25 00
IX 20x28, 40-lb. 112 sheets	27 75
IX 20x28, 25-lb. 112 sheets	21 15
IX 20x28, 25-lb. 112 sheets	23 80
IC 20x28, 20-lb. 112 sheets	19 55
IV 20x28, 20-lb. 112 sheets	22 05
IC 20x28, 15-lb. 112 sheets	18 05

"ARMCO" INGOT IRON PLATES

No. 8 ga. up to and including 1/4 in.—100 lbs.	\$4 55
--	--------

COKE PLATES

Cokes, 80 lbs., base, 20x28	\$13 60
Cokes, 90 lbs., base, 20x28	13 80
Cokes, 100 lbs., base, 20x28	14 00
Cokes, 107 lbs., base, IC	
20x28	14 30
Cokes, 135 lbs., base, IX	
20x28	16 40
Cokes, 155 lbs., base, 56 sheets	9 20
Cokes, 175 lbs., base, 56 sheets	10 05
Cokes, 195 lbs., base, 56 sheets	10 90

BLUE ANNEALED SHEETS

Base 10 ga.per 100 lbs.	\$3 50
"Armco" 10 ga.per 100 lbs.	4 00

ONE PASS COLD ROLLED BLACK

No. 18-20.....per 100 lbs.	\$3 75
No. 22.....per 100 lbs.	3 90
No. 24.....per 100 lbs.	3 95
No. 26.....per 100 lbs.	4 05
No. 27.....per 100 lbs.	4 10
No. 28.....per 100 lbs.	4 20
No. 29.....per 100 lbs.	4 35
No. 30.....per 100 lbs.	4 45

"ARMCO" GALVANIZED

"Armco" 24.....per 100 lbs.	\$6 15
-----------------------------	--------

GALVANIZED

No. 16.....per 100 lbs.	\$4 20
No. 18.....per 100 lbs.	4 45
No. 20.....per 100 lbs.	4 60
No. 22.....per 100 lbs.	4 65
No. 24.....per 100 lbs.	4 80
No. 26.....per 100 lbs.	5 05
No. 27.....per 100 lbs.	5 15
No. 28.....per 100 lbs.	5 20
No. 30.....per 100 lbs.	5 70

BAR SOLDER

Warranted 50-50.....per 100 lbs.	\$33 00
Commercial 45-55.....per 100 lbs.	20 00
Plumbers.....per 100 lbs.	27 00

ZINC

In Slabs.....	\$ 8 50
---------------	---------

SHEET ZINC

Cash Lots (500 lbs.).....	\$12 00
Sheet Lots.....	13 00

BRASS

Sheets, Chicago base.....	17 1/2 c
Mill base.....	18 c
Tubing, brazed base.....	26 1/2 c
Wire, base.....	18 1/2 c
Rods, base.....	15 1/2 c

COPPER

Sheets, Chicago base.....	25 c
Mill base.....	23 c
Tubing, seamless base.....	35 1/2 c
Wire, No. 3, B & S Ga.....	18 1/2 c
Wire, No. 10, B & S Ga.....	19 c
Wire, No. 11, B & S Ga.....	19 1/2 c
Wire, No. 3, B & S Ga. and heavier.....	18 1/2 c

LEAD

American Pig.....	\$7 00
Bar.....	8 00

TIN

Pig Tin.....per 100 lbs.	\$59 00
Bar Tin.....per 100 lbs.	60 00

HARDWARE, SHEET METAL SUPPLIES, WARM AIR FURNACE FITTINGS AND ACCESSORIES.

Paper up to 1/16.....	6c per lb.
Roll board.....	6 1/2 c per lb.
Mill board 3/32 to 1/2.....	6c per lb.
Corrugated Paper (250 sq. ft. to roll).....	\$6 00 per roll

BRUSHES

Furnace Pipe Cleaning Bristle, with handle, each	\$0 75
--	--------

Flue Cleaning

Steel only, each.....	1 25
-----------------------	------

BURRS

Copper Burrs only.....	40-2 1/2 %
------------------------	------------

CEMENT, FURNACE

American Seal, 5-lb. cans, net	\$ 45
American Seal, 10-lb. cans, net	85
American Seal, 25-lb. cans, net	2 25
Pecora.....per 100 lbs.	7 50

CHIMNEY TOPS

Adams' Revolving			
4 in.....	21 lbs.	Price Doz.	\$11 00
6 in.....	24 lbs.		11 50
7 in.....	30 lbs.		12 50
8 in.....	33 lbs.		15 00
9 in.....	51 lbs.		16 50
10 in.....	58 lbs.		18 00
12 in.....	66 lbs.		22 00
14 in.....	110 lbs.		36 00

CLINKER TONGS

Each.....	\$0 75
Per doz.....	8 40

CLIPS

Damper No-Rivet Steel, with tail pieces, per gross.....	\$9 50
Rivet Steel, with tail pieces, per gross.....	7 50
Tail pieces, per gross.....	2 40

COPPERS—Soldering

Pointed Roofing	
3 lb. and heavier.....per lb.	40c
2 1/2 lb.....per lb.	45c
2 lb.....per lb.	45c
1 1/2 lb.....per lb.	55c
1 lb.....per lb.	60c

CORNICE BRAKES

Chicago Steel Bending	
No. 1 to 6B.....	Net

CUT-OFFS

Gal., plain, round or cor. rd.	
26 gauge.....	30%
28 gauge.....	35%

DAMPERS

"Yankee" Hot Air	
7 inch, each 20c, doz.....	\$1 60
8 inch, each 25c, doz.....	2 20
9 inch, each 30c, doz.....	2 60
10 inch, each 32c, doz.....	3 20

Smoke Pipe

7 inch, doz.....	\$1 60
8 inch, doz.....	2 20
9 inch, doz.....	3 00
10 inch, doz.....	3 75
12 inch, doz.....	4 50

ADAMS No. 1 CHECK

Check and Collar Complete	
8 inch, each.....	2 00
9 inch, each.....	2 25
End Check Only	
8 inch, each.....	1 60
9 inch, each.....	1 85

Collar Only

8 inch, each.....	50
9 inch, each.....	45

No. 2 CHECK

8 inch, each.....	1 00
9 inch, each.....	1 00

10% Disc. on Adams No. 1 and No. 2 Check

Diamond Smoke Pipe	
7 inch, doz.....	\$ 2 00
8 inch, doz.....	3 20
9 inch, doz.....	4 20
10 inch, doz.....	5 00

Adams' Sheet Metal

7 inch, doz.....	\$ 1 60
8 inch, doz.....	2 20
9 inch, doz.....	2 60
10 inch, doz.....	3 80
12 inch, doz.....	3 50
14 inch, doz.....	5 00

EAVES TROUGH

Galv. Crimpedge, crated 75 & 5%	
Zinc, "Barnes".....	60%

ELBOWS

Conductor Pipe	
Galv. plain or corrugated, round flat Crimp.....	60%
28 Gauge.....	45%
26 Gauge.....	45%
24 Gauge.....	15%

Galv. & Terne Steel

Plain Rd. and Rd. Corr.:	
28 Ga.....	60%
26 Ga.....	45%
24 Ga.....	15%

Square Corrugated

No. 28 Gauge.....	50%
26 Gauge.....	35%

Fortice Elbows

Standard Gauge Conductor Pipe, plain or corrugated.....	70 & 5%
Not nested.....	70 & 5%
Nested Solid.....	70 & 5%

Sq. Corr., A. & B. & Octagon

28 Ga.....	50%
26 Ga.....	35%

Fortice

1", 1 1/4", 1 1/2".....	45%
-------------------------	-----

Copper

16 oz., all designs.....	50%
--------------------------	-----

Zinc—

All styles.....	60%
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ELBOWS—Stove Pipe

1-piece Corrugated, Uniform Blue "Milcor" No. 28 Gauge, Doz.....	\$1 05
5-inch.....	1 20
6-inch.....	1 20
7-inch.....	1 75

Special Corrugated

6-inch.....	\$1 00
7-inch.....	1 60

Adjustable—Uniform Blue

"Milcor" No. 28 Gauge, Uniform Blue.....	\$1 05
5-inch.....	1 75
6-inch.....	1 75
7-inch.....	2 10

WOOD FACES—50% off list.

FENCE

726-6-12 1/2 % (100 rods).....	\$23 68
1948-6-14 1/2 % (100 rods).....	43 62

FILES AND RASPS

Heller's (American).....	50-10%
American.....	60-10%
Arcade.....	50%
Black Diamond.....	50%
Eagle.....	50%
Great Western.....	50%
Kearney & Foot.....	50%
McClellan.....	50%
Nicholson.....	50%
Simonds.....	60%

FIRE POTS

Geo. W. Diener Mfg. Co.	Pa.
No. 02 Gasoline Torch, 1 qt.....	\$ 5 13
No. 0250, Kerosene, or Gasoline Torch, 1 qt....	6 50
No. 10 Tinner's Furn. Square tank, 1 gal.....	11 20
No. 15 Tinner's Furn. Round tank, 1 gal.....	10 70
No. 21 Gas Soldering Furnace.....	2 60
No. 110 Automatic Gas Soldering Furnace.....	10 50

Quick Meal Stove Co.

Vesuvius, F. O. B. St. Louis 30% (Extra Disc. for large quantities.)	
--	--

GALVANIZED WARE

Pails (Galv. after made), 10-qt.....	\$2 00
Tubs (Galv. after made), No. 1.....	5 75
No. 2.....	6 50

GLASS

Single Strength, A, 52-in. brackets.....	87%
Single Strength, A, 34 to 40-in. bracket.....	84%
Single Strength, A, all other brackets.....	89-5%
Double Strength, A, all sizes.....	89%

HANGERS

Conductor Pipe	
Milcor Perfection Wire.....	25%
Milcor Triplex Wire.....	10%

Eaves Trough

Milcor Steel (galv. after forming) List.....	plus 13 1/2 %
Milcor Self-Seal E. T. Wire, List.....	plus 50%

HOOKS

Conductor	
"Direct Drive" Wrought Iron for wood or brick.....	15%

HUMIDIFIER

"Front-Rank," Automatic	
In single lots.....	50%
In lots of 10 or more.....	50-5%
In lots of 25 or more.....	50-10%
Vapor pans, etc., each.....	50%

LIFTERS

Stove Cover	
Coppered.....per gro.	\$6 00
Alaska.....per gro.	4 75

MALLETS

Tinners Hickory.....per doz.	\$3 25
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MITRES

Galvanized steel mitres,	
28 Ga.....	70
26 Ga.....	60-20

NAILS

Cut Steel.....	\$4 25
Cut Iron.....	4 25

Wire

Common.....	2 10
Cement Coated.....	3 10

(Continued on Page 192)



Life Insurance for Sheet Steel

Insure longer life for the sheet steel you purchase!

Demand protection against corrosion and rust.

Specify

Inland Copper Alloy Steel.

Sheets to this specification last three to five times longer.

They are durable!

INLAND STEEL COMPANY
38 SOUTH DEARBORN STREET
CHICAGO

Sheets Rivets Billets Bars Plates Shapes
Rails Track Accessories

Contributing **SHEET STEEL** Member
TRADE EXTENSION COMMITTEE



GEROCK BROS. MFG. CO.
SHEET METAL ORNAMENTS
AND STATUARY
1252 So. Vandeventer Ave., St. Louis, Mo., U.S.A.
Write for Catalogue



The 12-Cylinder Ventilator
Used in Every State
in the Union.

**SPECIFY AEOLUS
VENTILATORS**

ÆOLUS FOR HOMES

The home should be properly ventilated—few of them are. Here is a sales opportunity often overlooked by the average Sheet Metal Worker, but one which offers a lucrative business to those who take advantage of it.

Æolus-Dickinson

Vent. Makers Since 1888

3332-52 South Artesian Avenue
CHICAGO

Phone: Lafayette 1862-1863

Round
Corrugated



Plain Round



NEVER MADE WITHOUT THIS

TRADE **F. Dieckmann** MARK

Quality and Service Made 'em Famous

Made of one piece of heavy gauge material, in all styles and angles from 10 to 90 degrees, of 24, 26, 28 ga. ternes, then galvanized after formation.

DIECKMANN
Elbows and Shoes
*are the standard of the market
and always give satisfaction*

Send for new catalogue 26 showing complete line

The Ferdinand Dieckmann Co.

P. O. Station B, Cincinnati, O.

Square
Corrugated
Style A



Square
Corrugated
Style
B



Not made lighter than
28 ga. or 16 oz. copper

ADVERTISERS' INDEX

The dash (—) indicates that the advertisement runs on a regular schedule but does not appear in this issue.

A

Aeolus-Dickinson Co.191
Agricola Furnace Co.138
Akrot Ventilators, Inc.198
American Brass Co.—
American Foundry & Furnace Co.—
American Furnace Co.—
Armco Distributors Assn. of America187
American Steel & Wire Co.195
American Wood Register Co.150
Arex Co.140
Armstrong Furnace Co.140
Auer Register Co.154
Automatic Humidifier Co.—

B

Banner Mahoning Furnace Co. —
Barnes Metal Products Co.—
Beh & Co.—
Berger Bros. Co.193
Berger Co., L. D.—
Bertsch & Co.195
Brillion Furnace Co.158
Buckeye Products Co.—
Burgess Soldering Furnace Co. 195
Burton Co., W. J.—

C

Calkins & Pearce158
Chicago Solder Co.—
Cleveland Castings Pattern Co. 193
Chicago Metal Mfg. Co.—
Connors Paint Co., Wm.—
Copper & Brass Research Association—

D

Dieckmann Co., Ferdinand191
Diener Mfg. Co., Geo. W.195
Dreis & Krump Mfg. Co.193

E

Eaglesfield Ventilator Co.—

F

Fanner Mfg. Co.—
Floral City Heater Co.152
Fox Furnace Co.137
Forest City-Walworth Run Fdy. Co.155
Fort Shelby Hotel.—
Friedley-Voshardt Co.195

G

Gerock Bros. Mfg. Co.191
Graff Furnace Co.135
Green Fdy. & Furnace Wks. 162

H

Hall-Neal Furnace Co.143
Harrington & King Perf. Co.192
Hart & Cooley Co.144
Haswell, John C.—
Henry Furnace & Foundry Co. 145
Hero Furnace Co.153
Hess-Snyder Co.—
Hessler Co., H. E.—
Homer Furnace Co.142
Hyro Mfg. Co.—

I

Independant Register & Mfg. Co.—
Inland Steel Co.191
International Heater Co.—

K

Kernchen Co.198
Kirk-Latty Co.158

L

Lamneck & Co., W. E.—
Lamson & Sessions Co., The. 158
Langenberg Mfg. Co.159
La Salle Machine Works.—
Lennox Furnace Co.136
Linde Air Products Co.—
Lupton's Sons Co., David.—

M

Marshalltown Mfg. Co.—
May-Fiebeger Co.159
Merchant & Evans Co.—
Meyer & Bro. Co., F.146
Meyer Furnace Co., The.—
Milwaukee Corr. Co., Back Cover
Moncrief Furnace Co.—
Mt. Vernon Furn. & Mfg. Co. 141
Mueller Furnace Co., L. J.134

N

New Jersey Zinc Sales Co., The —

O

Osborn Co., The J. M. & L. A. —
Oxweld Acetylene Co.183

P

Parker, Kalon Corp.199
Peck, H. E.198
Peck, Stow & Wilcox.—
Polk & Co., R. L.—
Prest-O-Lite Co., Inc.—

Q

Quick Meal Stove Co.195
Quincy Pattern Co.193

R

Richardson & Boynton Co.151
Robinson Co., A. H.147
Rybolt Heater Co.155
Ryerson & Sons, Inc., Jos. T. 195

S

Security Stove & Mfg. Co.155
Sheet Steel Trade Ex. Comm. —
Standard Code Computing Rule Co.—
Standard Furn. & Supply Co. 150
Standard Ventilator Co.193
St. Louis Tech. Inst.198
Stover Mfg. & Engine Co.154
Sturtevant Co.152
Success Heater Mfg. Co.—

T

Taylor Co., N. & G.—
Technical Products Co.198
Teela Sheet Metal Co.—
The Thatcher Co.157
Tuttle & Bailey Mfg. Co.149
XXth Century Htg. & Vent. Co. 139

U

United States Register Co.—
Unishear Co., Inc.—
Utica Division, Richardson & Boynton Co.—

V

Vedder Pattern Works193
Viking Shear Co.195

W

Warm Air Furnace Fan Co.148
Waterloo Register Co.152
Waterman-Waterbury Co.—
Western Steel Products Co.—
Wheeling Corr. Co.193
Whitney Mfg. Co., W. A.193
Whitney Metal Tool Co.193
Williamson Heater Co.161
Wise Furnace Co.154
Wonder Gas Appliance Co.158

Markets—Continued from Page 190

NETTING, POULTRY

Galvanized before weaving60%
Galvanized after weaving.50-10%

PASTE

Asbestos Dry Paste:
200-lb. Barrel\$18 00
100-lb. barrel8 75
35-lb. pail3 50
10-lb. bag1 10
5-lb. bag60
2½-lb. cartons35

POKERS, FURNACE

Each\$0 75

POKERS, STOVE

Nickel Plated, coll handles, per doz.1 10
Wrt Steel, str't or bent, per doz.\$0 75

PIPE

Conductor
Cor. Rd., Plain Rd., or Sq.

Galvanized
Crated and nested (all gauges)75-2¼%
Crated and not nested (all gauges)70-15%

Furnace Pipe

Double Wall Pipe and Fittings50%
Single Wall Pipe, Round Galvanized Pipe50%
Galvanized and Tin Fittings50%

Lead

Per 100 lbs.\$12 50

Stove Pipe

"Milcor" "Titelock" Uniform Blue Stove
28 gauge, 5 inch U. C. nested10 50
28 gauge, 6 inch U. C. nested11 00
28 gauge, 7 inch U. C. nested13 00
30 gauge, 5 inch U. C. nested9 00
30 gauge, 6 inch U. C. nested10 00
30 gauge, 7 inch U. C. nested12 00

T-Joint Made up

6-inch, 28 ga.per doz. \$ 4 00

All Zinc

No. 11, all styles60%

PULLEYS

Furnace Tackle.per doz. \$0 85
.....per gro. \$ 50
Furnace Screw (enameled)per doz. 75

PUTTY

Commercial Putty, 100-lb. Kits\$3 50

QUADRANTS

Malleable Iron Damper.10%

REDUCERS—Oval Stove Pipe

Per Doz.
7-6, 28-gauge, 1 doz. in carton\$3 00

REGISTERS AND BORDERS

Baseboard, Floor and Wall.

Cast Iron20%
Steel and Semi-Steel.40%
Baseboard, 1 piece.40-20%
Baseboard, 2 piece.40%
Wall40%
Adjustable Ceiling Ventilators40%

Register Faces—Cast and Steel

Jananned, Bronzed and Plated, 4x6 to 14x14.40%
Large Register Faces—Cast, 14x14 to 38x42.60%
Large Register Faces—Steel, 14x14 to 38x42.65%

Ventilating Register

Per gross9 00
Small, per pair30
Large, per pair50

RIDGE ROLL

Galv., Plain Ridge Roll, b'd'd75-10-4%
Galv., Plain Ridge Roll, crated75-10%
Globe Finials for Ridge Roll.50%

SCREWS

Sheet Metal
7, ¼x¼, per gross\$0 83
No. 10, ¼x¼, per gross 83
No. 14, ¼x¼, per gross. 83

SHEARS, TINNERS' & MACHINISTS'

Viking\$22 00
Lennox Threadless
No. 1835%
Shear blades10%
(f. o. b. Marshalltown, Iowa)

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No. 2 "Gem" wall.6 00 doz.

SHOES

Galv. 28 Gauge, Plain or corrugated round flat crimp.60%
26 gauge round flat crimp.45%
24 gauge round flat crimp.15%

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National40 & 10%
Star50%
MilcorNet

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(Add for bluing \$3 per doz. net)
MitreNet
TryNet
Try and Bavel.Net
Try and Mitre.Net
Fox'sper doz. \$6 00
Winterbottom's10%

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Gem, flat, No. 3.per doz. 1 00

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Galvanized Hog Wire, 80 red spool, per spool1 15
Galvanized Plain Wire, No. 9, per 100 lbs.\$ 85
Stove Pipe, per stone.1 10

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No. 879, Domesticeach 4 85
No. 119, Brightoneach 3 70
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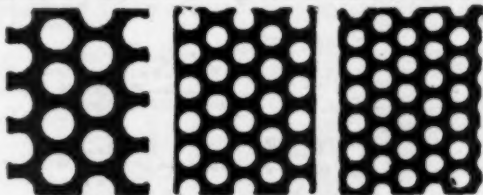


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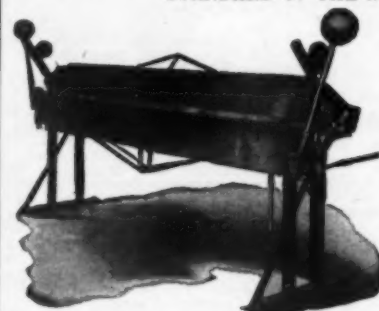
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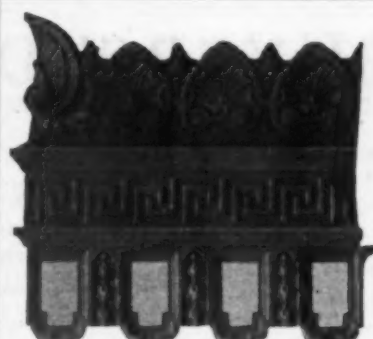
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Yearly subscribers to the **AMERICAN ARTISAN** may insert advertisements of not more than fifty words in our Want and Sales Columns **WITHOUT CHARGE**.

Such advertisements, however, must be limited to help or situation wanted, tools or equipment for sale, to exchange or to buy, business for sale or location desired and must reach our office by Thursday of the week of publication. This privilege is not extended to manufacturers or jobbers—or those making a business of buying and selling used machines, employment agencies and brokers.

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Partner wanted on a profit sharing basis only. Very little investment required (for good faith). A well established furnace and furnace specialty business in a city of near 100,000 wants a practical furnace man familiar with Standard Code Installation and with selling ability. Must be ambitious and not afraid of work. One 30 to 50 years of age preferred. Address L472, **AMERICAN ARTISAN**, 620 South Michigan Avenue, Chicago, Ill.

For Sale—Well established, equipped shop run in connection with large hardware store in suburb immediately adjacent to large Ohio city about \$16,000 business per year. This will only be sold to high grade mechanic capable of handling best class of work. This is one of the few good ones. If you can qualify as to ability you can get it for \$1,500 cash. Address X471, care **AMERICAN ARTISAN**, 620 South Michigan Avenue, Chicago, Illinois.

For rent or will sell plumbing heating and sheet metal business in lively town of 2,000. Cement block building 22-34, two floors with basement. Will rent with tools and machines for \$30.00 per month. Must have \$500.00 to buy stock. Write for full information to A. C. Buzard, Holly, Michigan. M472

For Sale—Sheet metal and furnace shop in county seat town of 3,500 population in Northeastern Iowa. Good set of tools and good business. Shop 25x40. Address X472, **AMERICAN ARTISAN**, 620 South Michigan Avenue, Chicago, Illinois.

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Want to exchange fertile, well located and improved grain and stock farm, one-half mile to town and elevator or stock yards; accredited grade and high schools; sixty miles to Kansas City; for an established combination plumbing, heating and tinning business in a good town, or half if the business is large enough to justify. Address J-471, **AMERICAN ARTISAN**, 620 S. Michigan Avenue, Chicago, Illinois.

For Sale—Tin shop and plumbing. Town 4000 in North Central Iowa. Good town, 2 railroads, new building in good location. Will sell or rent building. Reason for selling on account of age and health. Address D472, **AMERICAN ARTISAN**, 620 S. Michigan Avenue, Chicago, Illinois.

For Sale—An established Sheet Metal shop and building in the best city in Southern Illinois. Something good for a hustler. Address Williams Tin Shop, 139 S. Tate avenue, Centralia, Illinois. Z471

For Sale—Established sheet metal business in Des Moines, Ia. Half owner must retire. Address K472, **AMERICAN ARTISAN**, 620 South Michigan Avenue, Chicago, Ill.

For Sale—Sheet metal business completely equipped shop in a live little town; \$1,000 will handle good will and stock. Address Antelope Valley Shops, Lancaster, California. K-471

SITUATION WANTED

Situation Wanted—By good sheet metal worker. 28 years' experience at general sheet metal work, such as cornice, skylights, restaurant equipment, ventilation, boiler breeching and all kinds of furnace fittings. Does in and outside work, cut patterns and lay out work. Would like to hear from honest reliable concern. Address P471, **AMERICAN ARTISAN**, 620 S. Michigan Avenue, Chicago, Ill.

Situation Wanted—Hardware or furniture store having furnace department in connection and wishing to place this department in experienced hands to run and operate for them on paying basis. That's the job I want and I can prove my worth if given the opportunity. Can lay out, estimate, sell and install. References. Address T472, **AMERICAN ARTISAN**, 620 South Michigan Avenue, Chicago, Ill.

Wanted—A job by a real first-class sheet metal worker. 22 years' experience mostly inside work. Thoroughly understands the business from A to Z, knows how to do an honest day's work and is not afraid to do it. References both as to character and ability if desired. Address S. M. Strange, 408 West Third Street, Charlotte, N. C. P472

Situation Wanted—An A-1 all around sheet metal and layout man wants steady job at once. Married, sober, steady and a hustler. Can handle men to advantage. References. State particulars and pay to Q471, **AMERICAN ARTISAN**, 620 S. Michigan Avenue, Chicago, Illinois.

Situation wanted as sheet metal worker or lay out man. Have had heating, blow pipe and factory experience. Married and 30 years of age. Sober and steady. Want steady work with reliable firm, prefer Wisconsin or California. Address S472, **AMERICAN ARTISAN**, 620 South Michigan Avenue, Chicago, Ill.

Situation Wanted—By General Sheet Metal furnace man and pattern cutter. 19 years' experience Engineering knowledge of warm air heating. Steady work with good clean outfit desired. State full particulars. Address Box 175, Elmer, Mo. O471

Position wanted by sheet metal worker, married and thirty years of age. 12 years' experience in sheet metal work. Can draft patterns and read blue prints. State wages in first letter. Address R472, **AMERICAN ARTISAN**, 620 South Michigan Avenue, Chicago, Ill.

SITUATION WANTED

Situation Wanted—By a first class tinner. 10 years' experience. Practical Standard Code Furnace Installer. Good knowledge of hardware, also some plumbing and general job work. Estimate sheet metal and furnace work. Reasonable salary and good service. Address H. J. Ester, 309 Olive street, Washington, Mo. W471

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Position wanted by a first-class tinner and furnace man. Knows the Standard Code. Can do inside and outside work. 25 years' at the trade. Married. Can do anything that comes in any tin shop. Address W. J. Mack, 201 2nd Avenue, South Saint Charles, Ill. W472

Situation Wanted—By sheet metal worker and furnace man. 15 years at the trade. Age 32 and married. Sober and want year around job. Address W. E. Hull, 530½ S. Water street, Wichita, Kansas. S471

Combination plumber and tinner wants job at once. Can do plumbing, furnace and sheet metal work. 35 years of age, married and 12 years' experience. Address H. W. Chambers, Clarksville, Ia. O472

Situation Wanted—By all around sheet metal worker, skylight, ventilation, blow pipe and furnace work. Layout and work from blue prints. Address L-471, **AMERICAN ARTISAN**, 620 S. Michigan Avenue, Chicago, Illinois.

HELP WANTED

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Help Wanted—Furnace salesman. Must be able to layout and estimate according to code. Meyers Sheet Metal Works, Janesville, Wisconsin. B472

Tinner Wanted—Must be a good tinner, sheet metal worker and roofer, also furnace man. Sober. Address C. G. Timm, North Platte, Neb. G472

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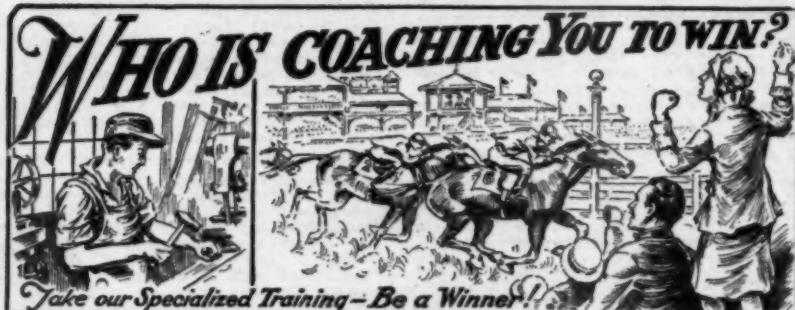
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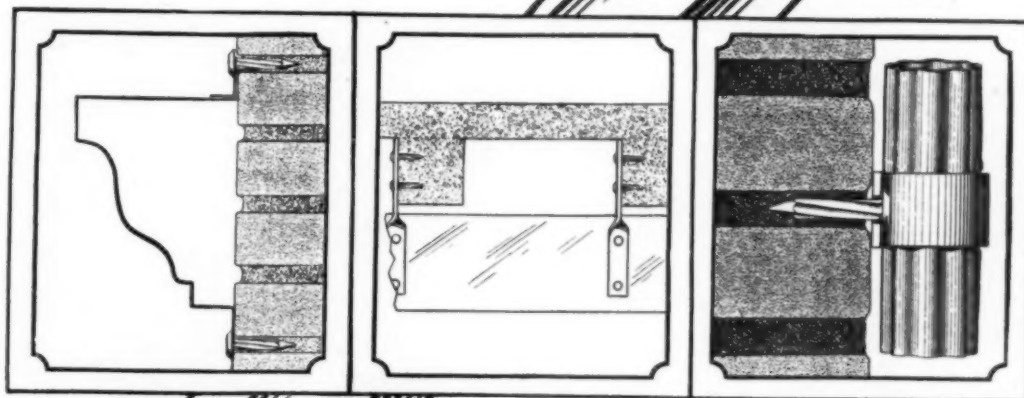
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THEY save time—that's profit. They save labor—that's more profit. And besides, Parker-Kalon Hardened Masonry Nails are so much easier to use. That's why thousands of sheet metal workers have given up the use of costly devices like expansion bolts, lead anchors, hooks, etc., for making fastenings to brick, mortar and concrete. Now, by simply driving in Parker-Kalon Hardened Masonry Nails they are hanging ventilating ducts, attaching cornices and flashings, fastening gutter and leader and doing many other jobs at a fraction of the former cost.

You can hammer these Nails into masonry like ordinary nails into wood. Even in concrete you need only drill a hole to give the Nail a start. As you hammer it in, the spiral ribs of the Nail cut into the material and take a firm grip—making a fastening that won't come loose.

Hardened Masonry Nails are made in three sizes: $\frac{3}{16}$ " x 1", $\frac{1}{4}$ " x $1\frac{1}{2}$ ", $\frac{1}{4}$ " x 2". Furnished in electro-galvanized finish; packed 100 in a box and in bulk, in kegs.

Let us send you a handful

Try them out yourself—it's the only way to find out just what these Nails will do. Write for them now—we will gladly send free samples.

Parker-Kalon
Hardened
Masonry Nails

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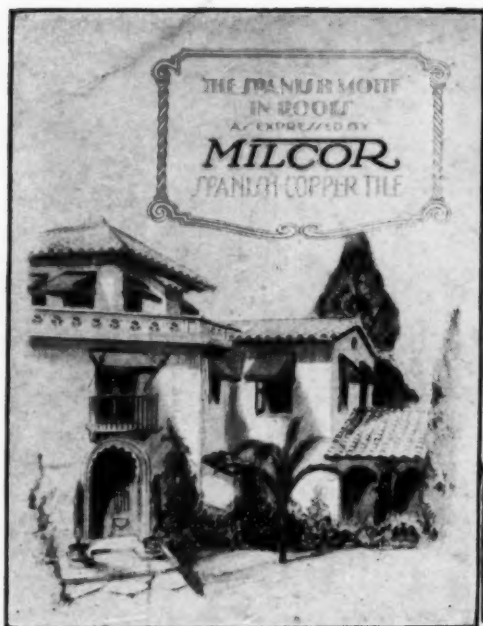
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Everlasting Milcor Copper Tile are simple to erect, stormtight and profitable alike to owner and contractor.



A Beautiful Broadside Suggests Selling Everlasting Roofs

A SUGGESTION assisted by a few facts often leads to far more profitable sales than would be made without the suggestion.

For the roofs of those fine homes and other high quality buildings for which you prepare estimates, suggest Milcor Pure Anaconda Copper Spanish Tile Roofing. Any owner will be proud of such a roof. It will be beautiful. There will be no maintenance cost, because copper is everlasting. The initial cost is reasonable. And your profit will be attractive.

A beautiful broadside prepared for architects and for the Sheet Metal Trade, especially suitable for hanging in your office, will be mailed free on request. And if you haven't a copy of "The Milcor Architectural Sheet Metal Guide", write for it.



[This broadside is printed in five colors, showing a Milcor Spanish Copper Tile in natural blue-green verdigris. It is a beautiful piece of printing—you'll want it.]

MILWAUKEE CORRUGATING CO., Milwaukee, Wis.
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